Environmental Compliance Approval No. A272902

Lindsay Landfill Site: Annual Monitoring Report (2024)

Municipality of Northern Bruce Peninsula, Ontario

Submitted to:
Municipality of Northern Bruce Peninsula
56 Lindsay Road 5
Lion's Head, ON N0H 1W0

Submitted by:
GEI Consultants Canada Ltd.
1260 2nd Avenue East, Unit #1
Owen Sound, ON N4K 2J3
519.376.1805
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Project No. 2402868

Andrea Nelson
Project Manager

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1. INTRODUCTION

The Lindsay Landfill Site is located west of Provincial Highway No. 6, approximately 2 km south of Miller Lake and is accessed through the site entrance on Ira Lake Road. It is situated within Lots 18, 19, and 20, Concession 3 West of Bury Road (W.B.R.), in the former Township of Lindsay, Municipality of Northern Bruce Peninsula, County of Bruce, where shown in Figure 1. The landfill was owned and operated by the Township of Lindsay from the early 1970's to 1999. The Municipality was formed in 1999 as the result of the amalgamation of the former Townships of Eastnor, Lindsay and St. Edmunds, as well as the Village of Lion's Head. Prior to 1999 each respective township was serviced by a landfill, of which the Municipality assumed ownership upon amalgamation. As a result, the Lindsay landfill is one of three landfill sites that service the Municipality and is approved to accept non-hazardous municipal waste generated from within the geographic boundaries of the Municipality.

Operations are conducted under Environmental Compliance Approval No. 272902 (ECA; formerly a Certificate of Approval), issued June 11, 1980, and amended June 1, 2005, August 2, 2005, May 16, 2006, and January 29, 2007. A copy of the Approval and its amendments is provided in Appendix A. Under the ECA, the Ministry of the Environment, Conservation and Parks (MECP) has approved a useable area of approximately 1.36-ha for landfilling. The volume of waste and daily cover currently approved under the Development & Operations Report (Henderson Paddon & Associates Ltd., 2006), hereafter referred to as the Plan of Development and Operations (PDO), is 57,900 m^3 (not including final cover). An additional 4.94 hectares has been approved as a waste disposal site with a theoretical volumetric capacity of 690,000 m^3. It is our understanding that development of the remaining site capacity would require an updated PDO and approval from the MECP.

In 2008, an area of approximately 26-hectares of additional buffer land was acquired by the Municipality which increased the buffer zone by 200 meters to the east and west and approximately 250 meters to the south, increasing the total site area to approximately 32.3 -ha. The site layout is shown in Figure 2.

Condition 10 of the Approval requires that a monitoring report, summarizing the previous year's operations, waste quantities, and groundwater and surface water quality results, be submitted to the MECP by June 30th of each year. This monitoring report, for the year 2024, is being submitted to meet the requirements of the ECA.

2. SITE USAGE

According to Statistics Canada's 2021 census data, the Municipality of Northern Bruce Peninsula has a permanent population of 4,404 and a total of 5,101 dwellings, of which 2,206 are occupied by permanent residents. For the purpose of waste generation and usage of waste management services, the contributing population is more accurately estimated to be 5,610. This is based on the method adopted by Waste Diversion Ontario (WDO) where 6 seasonal households are equivalent to 1 permanent household and an average of 2.5 persons per permanent household. The former Township of Lindsay is estimated to account for approximately 15% of the population in the Municipality of Northern Bruce Peninsula, which equates to about 840 persons.

The Lindsay landfill is currently one of three landfill sites approved for the disposal of solid non-hazardous waste that services the Municipality of Northern Bruce Peninsula. The landfill services the residential sector and the industrial, commercial, and institutional (IC&I) sector located within the service area.

Since 2017 the entire Municipality has been serviced by curbside waste and recycling collection. Residents are limited to 2 bags per week. Although the Municipality provides waste collection services on a weekly basis to the residents of the former Township of Lindsay, waste from the curbside collection services is no longer disposed of at the Lindsay Landfill Site but is now primarily transported to the Eastnor Landfill Site for logistical reasons.

Activities that currently occur at the Lindsay Landfill Site include: landfilling of residual waste, burning of clean wood wastes, collection of blue box materials, electronic waste, and mattresses, and stockpiling of scrap metal and tires, as appropriate. According to Site records an estimated 430 tonnes (metric) of waste was landfilled at the Lindsay landfill site during the reporting period.

3. SITE DEVELOPMENT AND OPERATIONS

3.1. Site Development and Operations

In 2006, reconstruction activities were completed to address the steep perimeter slopes that previously existed at the site, uncovered waste, and ponded water. Additionally, the landfilling method was changed from the dumping method to the area ramp method, as outlined in the PDO. The area-ramp method is efficient with respect to space utilization and requires less cover material than other methods. The Municipality currently uses a packer to help maximize the waste density achieved at the Site.

Since 2007, landfilling has generally occurred in the central to westerly portion of the approved landfill footprint. The approximate location of the active area is shown in Figure 3. The improved landfilling methods and reconstruction activities have resulted in the elimination of ponding water, improved compaction, and improved site aesthetics. Continued attention should be given to ensuring that waste within the active area is sufficiently covered in a timely fashion with an adequate volume of material.

3.2. Periods of Operation – Landfill Hours

Currently, the Site is open to the public/vehicles hauling waste during the following operating hours:

Table 3-1. Lindsay Landfill Site – Hours of Operation

Date	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Nov 1 – March 31	Closed	Closed	Closed	Closed	Closed	10:00 – 4:00	Closed
April 1 - Oct 31	Closed	Closed	Closed	Closed	9:00 – 5:00	Closed	9:00 – 5:00

A sign at the access gate notes the hours of operation. A site attendant is present during operating hours. When the site is closed to the public, a locked gate across the entrance road controls access to the site. Waste may be received outside the hours of operation, by appointment and under the supervision of a trained attendant.

3.3. Waste Receiving Station

In 2009, the Municipality completed the construction of a waste receiving station at each of their landfill sites (Eastnor, Lindsay, and St. Edmunds). The waste receiving station at the Lindsay Landfill Site is located approximately 200 meters north of the landfill along the site access road. The waste receiving station includes a weigh scale and transfer bins for recyclables and waste to be landfilled. The collection bins are available to the public for waste drop-off and sorting. Access to the landfill area is limited to contractors and municipal employees.

4. SITE LIFE EXPECTANCY

In November 2022, a comprehensive survey of the landfilled area was completed by GM BluePlan Engineering Limited (now GEI Consultants Canada Ltd.) to more accurately estimate the remaining Site capacity. Based on the volumetric difference between the topographical survey data (i.e., end of 2022) and the final contours, an estimated remaining capacity of 28,000 m^3 was calculated for waste, daily and final cover.

Using the elevation difference between annual topographic surveys limited to the active area of landfilling completed in December 2023 and December 2024, a capacity of 1,645 m^3 was calculated to have been used during 2024. Assuming 20% interim cover by volume, the amount of landfilled waste in 2024 was estimated to be 1,300 m^3. A topographic volumetric survey of the active area is scheduled for the Fall of 2025.

Based on the comprehensive survey completed in 2022 and the subsequent annual topographic surveys, as of the end of 2024 the remaining capacity for waste and interim cover within the 1.36-ha approved area is estimated to be 15,000 m^3. Based on an average fill rate for the period between 2020 and 2024 of 1,580 m^3, the site life expectancy is estimated to be in the range of 7 to 10 years under current operations. It is noted that the volume for final cover and topsoil of 9,200 m^3 generally remains unused. Furthermore, this fill rate represents waste dropped off at the site by residents and contractors; curbside waste is diverted to the other two (2) municipal landfill sites. A summary of the estimated yearly fill volumes is provided in Table 1.

5. LANDFILL MANAGEMENT

5.1. Vector, Vermin and Wildlife Control

At the Lindsay Landfill Site there are several types of vermin, vector and wildlife that have been identified as requiring some form of precautionary management plan, including bees/wasps, coyotes, gulls, turkey vultures, rodents, and black bears. Control can effectively be accomplished by applying cover material after each day of refuse deposition and through good housekeeping (i.e., daily litter pick-up, regular site inspection and proper waste segregation practices). An electric fence also lines the perimeter of the waste disposal area to discourage black bears and coyotes from entering the active area of the waste disposal site. The 'Vector and Vermin Control/Management Plan' should be implemented if vermin, vector and/or wildlife become a nuisance.

It is noted that the construction of the waste receiving station at the site entrance limits public access to the site which has resulted in improved waste segregation and refuse deposition practices.

5.2. Litter Control

Continued litter pick-up is recommended to help prevent fire hazards and unsightliness. The application of cover material after each operating day will help with litter control. According to Condition 7 of the Approval, litter pick-up must occur in the early spring and late fall, including along the fence line and any surface water bodies on the property. The Municipality must also undertake or arrange litter pick-ups around the site between the months of May and September. A litter pick-up schedule must be submitted to the District Manager by the landfill owner each year indicating the proposed litter pick-up schedule for the year. To satisfy Condition 7 of the Approval, the litter pick-up schedule for 2025 is included in Appendix B.

6. BURNING OPERATIONS

As per Condition 5 of the Approval, the burning of clean wood and brush in accordance with the MOE Guideline "Burning at Landfill Sites" is allowed. Any brush, trees and clean wood material should be stockpiled separately. Before burning takes place, the Chief Fire Official must be notified of the date and time the burn is to take place, in accordance with the Municipality of Northern Bruce By-Law No. 2000-24, as amended.

Burning at the site is to be restricted to clean, dry wood waste such as brush, trees, and lumber. These wood wastes are to be stockpiled in a designated burn area located on-site. Burning of designated wood waste is to be carried out in an area at least 30 meters away from the active landfill area. Additionally, an area of 4.5 meters around the burn pit should be kept free of vegetation.

Burning is to occur only on clear, dry, windless days and is to be conducted under the direct supervision of an attendant at all times. The site attendant is responsible for the removal of any non-wood wastes from the pile prior to burning, as well as regularly removing cold ashes from the burn area for disposal in the active landfill area. The attendant must fully extinguish the fire at the end of the day.

In 2024, approximately 91 tonnes of clean wood waste and brush was reportedly received at the Site. This material was presumably burned.

7. RECYCLING AND WASTE REDUCTION

Refuse segregation and recycling services are available at all three municipal landfill sites. In addition, to encourage recycling, this waste diversion stream is included in the curbside collection services provided to the entire Municipality.

The site attendant/supervisor is responsible for the proper segregation and recycling of refuse at the Site. Waste segregation and recycling occurs in the waste transfer and receiving area for ease of access and supervision. It is important that the Municipality continue to remove stockpiles of recyclable goods on a regular basis to prevent clutter and to maintain an aesthetically acceptable site. The following goods are separated from the solid municipal waste and stockpiled in designated areas that are clearly labelled.

7.1. Blue Box Materials

In addition to the curbside collection of recyclable materials, the Municipality currently provides three depot locations for drop-off of recyclables, each associated with the existing Municipal Landfill Sites. The Municipality accepts mixed recyclables, meaning that all accepted recyclable materials can be placed into one bin at the Municipality's Recycling Depots/Facilities. Recyclables are then transferred to a Material Recovery Facility (MRF) in Mount Forest. This single-stream recyclable processing uses separation technologies specifically designed for a mixed stream. The current list of recyclable items accepted by the Municipality includes the following:

- glass
- steel paint cans
- aluminum cans, foil, and pie pans
- paper, boxboard and cartons
- various types of plastic including, but not limited to, PETE, HDPE, LDPE, PP, and PVC

Waste Management has provided an analysis of the blue box recyclables diverted from the Eastnor, Lindsay and St. Edmunds landfill sites located in the Municipality of Northern Bruce Peninsula for the 2024 calendar year. It is noted that the amount of blue box recyclables diverted, specifically from the former Township of Lindsay, is not available. However, an estimate has been completed based on the percentage of the estimated population contributing recyclables from within the former Township of Lindsay. The estimated population contributing waste to each municipal landfill is as follows:

Table 7-1. Northern Bruce Peninsula – Population Proportions

Estimated Contributing Population		
Site	**Total Persons**	**Percent**
Eastnor	2,525	45%
Lindsay	840	15%
St. Edmunds	2,245	40%
Total	5,610	100%

Based on the estimated proportion of the municipal population in each of the former townships, the estimated recyclables diverted from each of the municipal landfills (in tonnes) for the 2024 calendar year is presented below:

Table 7-2. Northern Bruce Peninsula – Diversion Estimates

Landfill Site	Total Diverted (Tonnes)
Eastnor	217.8
Lindsay	72.6
St. Edmunds	193.6
Total	**484.0**

The total quantity of blue box recyclables diverted from the Municipal landfill sites was 484 tonnes. Based on the proportion of the Municipality's population serviced by the Lindsay landfill (i.e., 15%), an estimated 72.6 tonnes of the blue box recyclables were diverted from the Lindsay landfill.

7.2. Used Tires

In January 2019, tires were the first material to be moved to the individual producer responsibility (IPR) framework under the updated waste diversion legislation, the Waste-Free Ontario Act. The Municipality continues to collect, and stockpile, used tires at all three of its landfills. As a registered collector, the Municipality accepts used tires from residents. These tires are recycled by tire producers (or Producer Responsibility Organizations), who are now directly responsible and accountable for meeting mandatory collection and recycling targets for used tires. According to the site records, an estimated quantity of 263 tires weighing approximately 3.3 tonnes were received at the Lindsay landfill in 2024. Tires are periodically removed from the Site by All Ontario Recycling (AOR).

Tires are stockpiled at the site for recycling purposes. According to O.Reg.347 s.6(3), there must be fewer than 5,000 tire units at any given time. The volume of tires within an individual stockpile should not exceed 300 m^3. There must be more than 15 meters between the stockpile and the property line, buildings, and the active area of the landfill, and greater than 30 meters separation between the tire pile and the burn pile. Tires should be stockpiled in an area where there is no vegetation within 4.5 meters. Individual stockpiles should be separated from each other and from other waste piles by a minimum of 6 meters.

7.3. Scrap Metal: Propane Tanks, Scrap Metal and White Goods

The Municipality accepts scrap metal at the Site, including propane tanks and both chlorofluorocarbon (CFC)-containing (i.e., air conditioners, dehumidifiers, freezers, refrigerators, and water coolers) and non-CFC-containing white goods. White goods and marketable scrap metals should be stockpiled separately. Site records indicate that 23 tonnes of scrap metal (including propane tanks and white goods) was diverted from the waste stream at the Lindsay Landfill Site in 2024. Scrap metal and white goods are periodically removed from the Site for recycling by All Ontario Recycling (AOR).

Propane Tanks

Empty propane tanks should be stored on the ground surface in a segregated area. Tanks should be stored in such a manner that minimizes the potential for cylinder valves to be damaged or broken (i.e., in a single layer and in an upright position).

White Goods

In compliance with Ontario Regulation 463/10, CFC-containing white goods are to be properly drained by a certified technician and then tagged to indicate that the CFC's have been removed, prior to the removal of white goods from the site. White goods and scrap metal are collected by a hauler on an as needed basis for salvage.

7.4. Automotive Batteries

Batteries are to be stored in a single layer under a roof to prevent precipitation from coming in contact with the batteries and in a manner that provides secondary containment in the event of leakage. Currently, batteries are stored in a site shed to prevent spills or weathering. According to the Site operational records, 3 battery units were received at the site in 2024.

7.5. Electronic Waste

The Municipality has been collecting e-waste since 2010. Initially the electronic waste diversion program was operated by the Ontario Electronic Stewardship (OES) who was responsible for electronics recycling in Ontario on behalf of the electronics industry. In January 2021, Electrical and Electronic Equipment (EEE), specifically information technology, telecommunications, and audio-visual equipment (ITT/AV), became the third material to be moved to the individual producer responsibility (IPR) framework under the Waste-Free Ontario Act. OES did not operate a program for lighting; the producer responsibility for lighting equipment came into effect in January 2023.

The Municipality continues to collect and stockpile electronic waste at all three of its landfills. Electronic waste can be dropped off free of charge. At the Lindsay Landfill Site electronic waste is stored and locked in a steel shipping container. The municipality reported receiving 1.9 tonnes of electronic waste at the site during the reporting period.

7.6. Mattresses

In 2012, the Municipality began diverting mattresses as an additional waste diversion stream. According to the Site operational records 122 mattresses, totaling approximately 1.8 tonnes, were received at the Lindsay Landfill during the reporting period. These mattresses are stored in a dry storage area at the Site and are removed periodically for recycling by Recyc-matelas Inc.

7.7. Hazardous and Special Products (HSP)

In October 2021, Hazardous and Special Products transitioned to the individual producer responsibility framework. The HSP program for the Municipality is operated by Bruce County through the Orange Drop Program. In the Municipality of Northern Bruce Peninsula, the County typically provides two to three collection events per year. Under the Orange Drop program residents can drop off hazardous materials free of charge.

Based on the Household Hazardous Waste Program summary of materials reportedly received by the County, the amount of HSP collected through the Orange Drop Program was estimated to be 15.3 tonnes during the reporting period. Based on the proportion of the Municipality's population serviced by the Lindsay landfill (i.e., 15%), an estimated 2.3 tonnes of HSP was diverted from the Lindsay Landfill Site through the Orange Drop Program.

7.8. Leaf and Yard Waste

Although the Municipality promotes home composting for wet organics through the distribution of backyard composting bins, a leaf and yard waste composting pile is maintained at the Site. The municipality reported receiving an estimated 46 tonnes of leaf and yard waste at the site during the reporting period. This pile should be turned on a regular basis. Surface water run-off generated from this pile should be either prevented or managed. If the pile becomes odorous, it should be placed in the active face of the landfill and immediately covered. Topsoil generated from this service can be used for placement over the final cover.

7.9. Waste Reduction Summary

Based on the sum of the diversion programs at the Lindsay Landfill Site, approximately 151 tonnes of materials were diverted from being landfilled during the reporting period. This estimate does not include clean wood and brush (i.e., burnable). In addition, the variation in the quantity of waste diverted over the years is primarily related to the quantity of leaf and yard waste received.

Table 7-3. Summary of Waste Diversion (Tonnes)

Materials Diverted	2017	2018	2019	2020	2021	2022	2023	2024
Blue Box Recyclables	78.2	82.6	73.0	78.3	85.3	79.6	67.6	72.6
Tires	1.87	1.13	3.04	4.73	3.47	3.38	2.48	3.3
Scrap Metal & White Goods	34.8	31.3	49.3	63.4	56.8	43.2	28.1	23.0
Automotive Batteries	0.23	0.15	0.13	0	0.20	0.07	0	0.05
Electronic Waste	3.7	5.3	8.2	6.2	5.3	5.8	2.7	1.9
Mattresses	1.8	1.4	2.6	3.2	2.5	2.7	1.9	1.8
HSP	3.0	3.2	2.5	1.3	2.3	2.4	2.4	2.3
Leaf and Yard Waste	25.0	65.3	35.0	647	294	120	119	46.0
Total	**148.6**	**190.4**	**173.8**	**804.1**	**449.9**	**257.2**	**224.2**	**151.0**

8. SUMMARY OF HYDROGEOLOGIC SETTING

The Lindsay Landfill Site is located within the physiographic region known as the Bruce Peninsula (Chapman and Putnam, 1984). This region is characterized by generally flat topography with shallow overburden and abundant bedrock exposed at ground surface. Regionally, the bedrock dips gradually to the south-west, towards Lake Huron. The exposed bedrock surfaces are scoured from glacial activity and are typically irregular due to weathering. At the site, the overburden primarily consists of silty sand, which varies in thickness from 0 to 2.2 meters and is underlain by weathered dolomite bedrock of the Guelph Formation.

Based on the borehole logs for the existing monitoring wells (Appendix C), the shallow bedrock is highly fractured, consisting primarily of horizontal fractures and increasing in competency with depth (i.e., decreasing fracture frequency with depth). Although the site is located in an area that is known to potentially contain karstic features, the completion of a preliminary inspection indicated that there are no significant karstic features in the immediate vicinity of the approved landfill footprint. Additionally, based on the consistent identification of highly fractured shallow bedrock trending to more competent bedrock with depth during previous investigations, there does not appear to be a significant preferential pathway beyond the highly fractured bedrock for shallow groundwater flow that could provide for irregular or unexpected contaminant transport at the site. The relatively high degree of fracturing observed at all monitoring well locations suggests a high degree of connectivity in the upper bedrock unit. Consequently, the most probable receptor of leachate impacts is considered to be the upper/shallow bedrock unit.

The topography slopes gently to the southeast towards a series of low-lying wetland areas located within the drainage area of Spring Creek. Based on the groundwater elevations, as measured in the monitoring wells, shallow groundwater beneath the site is inferred to flow southeasterly (Figure 4).

Surface water features at the site are limited to a small intermittent creek that originates from a seasonal groundwater fed spring located approximately 10 m east of the landfill. The creek flows east for approximately 40 meters then southerly into a low-lying wetland area that is located south of the site. The intermittent creek can be described as a small, vegetated swale with no defined creek bed that dissipates into the wetland area.

The wetland area directly south of the site appears to be related to a series of wetlands that are part of the Spring Creek drainage basin. Spring Creek is located approximately 400 meters south of the landfill and flows westerly towards Lake Huron. There is no apparent direct surface water connection between the small intermittent creek and Spring Creek.

9. MONITORING REQUIREMENTS

9.1. Monitoring Locations

Currently, the Lindsay Waste Disposal Site has four groundwater, one domestic, and two surface water monitoring locations, where shown on Figure 3. Water quality has been consistently monitored at the site since September 2000. Monitoring is used to assess the groundwater flow regime at the Site, to monitor water quality downgradient of the fill area and to assess site compliance.

Groundwater

According to the borehole logs, the overburden thickness is less than 2.5 meters in the vicinity of the approved landfill and the underlying dolostone contains primarily horizontal fractures, showing decreased weathering with depth. Therefore, based on the topography and groundwater discharge areas associated with the creek, it is anticipated that horizontal groundwater flow through the shallow bedrock would be promoted. Consistent with this conceptual model, the monitoring wells were installed within the shallow bedrock to a maximum depth of 7.9 meters below ground surface (mbgs). Well screens are reported to intersect various fractures at depths ranging between 2.5 mbgs and 6.7 mbgs (refer to borehole logs provided in Appendix C).

Robbins Well

A domestic well is located approximately 300 m to the east, across Ira Lake Road and hydraulically cross-gradient from the existing landfill, where shown on Figure 2. The water quality at this location is monitored in conjunction with the groundwater monitoring program for the Site. Based on a MECP Well Record search, a well record has not

been registered for this property. The property is owned by the Municipality and no other residences are located nearby. It is our understanding that the tenant uses the water supply as a source of potable and non-potable water.

Surface Water

Prior to the spring of 2006, surface water samples were collected from sampling locations SW-1 and SW-2, where shown on Figure 3. Sampling location SW-1, which continues to be monitored, is collected from the primarily groundwater fed intermittent creek that drains from the site. Historical monitoring location SW-2 was collected from ponded water directly east of the active landfill area. Remedial actions implemented in 2006, including reshaping of the perimeter slopes and covering of exposed waste, effectively removed the stagnant leachate impacted water associated with SW-2.

Surface water sampling location SW-3 was established in 2006 and is situated approximately 50 meters downstream from SW-1. At that time, SW-3 was located near the former easterly property boundary and monitored PWQO compliance. However, due to the additional buffer lands acquired by the Municipality in 2008, the compliance limit to the east is now approximately 200 meters east of SW-3. Consequently, monitoring location SW-3 currently represents surface water discharging into the onsite wetland.

9.2. Monitoring Program

Water quality at the Site has consistently been monitored since 2000. It is noted that in 2006 the Municipality voluntarily increased the sampling frequency from once to twice annually to allow for the early detection of elevated leachate concentrations due to the limited buffer lands downgradient of the landfill at that time. However, as the Municipality acquired additional buffer lands in 2008, thereby greatly reducing the potential for off-site impacts, MECP concurrence was provided in 2013 to resume the once-annual sampling frequency for groundwater. The surface water monitoring frequency continues to be twice annually in the spring and fall.

The sampling program currently consists of sampling from the four on-site monitoring wells, the domestic well (i.e., Robbin's Well) and two surface water locations (i.e., SW-1 and SW-3), and is summarized as follows:

Table 9-1. Water Quality Monitoring Program

SAMPLING LOCATIONS	ANALYTICAL PARAMETERS
GROUNDWATER (Fall Only)	
TW-1 TW-2 TW-3 TW-4 Robbins Well	Alkalinity, Conductivity, pH, Hardness, TKN, Ammonia, DOC, Phenols, Chloride, Nitrate, Nitrite, Sulphate, Phosphorus, Calcium, Iron, Magnesium, Potassium and Sodium
SURFACE WATER (Spring and Fall)	
SW-1 SW-3	Alkalinity, Conductivity, pH, Hardness, TKN, Ammonia, DOC, Phenols, Chloride, Nitrate, Nitrite, Sulphate, Phosphorus, and Sulphide. Metals including Sodium, Potassium, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, and Zinc. Field Temperature

9.3. Sampling Procedures

For groundwater sampling, the static groundwater level and well depth are measured in each monitoring well prior to purging three casing volumes of stagnant water from each well. GEI personnel also check to ensure that all monitoring wells are properly secured and in compliance with O.Reg.903. After purging, monitoring wells are allowed to recharge with fresh groundwater before sampling occurs. Groundwater purging and sampling is conducted using dedicated Waterra™ tubing and inertial-type pumps. Samples are collected in laboratory supplied containers and are kept chilled following completion of the sampling program and sent within 24 hours of the sampling event to an accredited laboratory for analysis. Under the site-specific program, samples collected for indicator metals are placed in laboratory supplied containers without preservative and are filtered and preserved at the lab prior to analysis.

Surface water samples are collected by submerging the appropriate sample container into the water body and removing the container when a sufficient volume of sample has been collected. During collection, contact with the bottom sediment is avoided to prevent stirring-up sediment. When collecting surface water samples, direct dipping of the sample bottle is acceptable unless the bottle contains preservative. For those samples requiring preservative, a clean unpreserved bottle is used to obtain the sample, which is then transferred into the appropriate preserved bottle. Surface water samples collected for total metals are placed in laboratory supplied containers with preservative and are not filtered prior to analysis. The surface water temperature is measured and recorded at the time of sampling.

The groundwater and surface water samples are kept chilled following completion of the sampling program and sent within 24 hours of the sampling event to an accredited laboratory for analysis. Copies of the 2024 laboratory analytical reports are provided in Appendix D.

10. DETERMINATION OF REASONABLE USE CRITERIA FOR THE SITE

10.1. Determination of Action Levels

MECP Guideline B-7 establishes the basis for determining what constitutes the reasonable use of groundwater on properties adjacent to landfill sites. This approach uses both the provincial maximum concentrations identified in the Ontario Drinking Water Standards (ODWS), revised June 2006, and the site-specific background values, to calculate acceptable concentrations at the Site boundary. By applying the RUC, the potential use of groundwater for domestic consumption will almost always provide the lowest allowable concentration limits, referred to as the objective levels. MECP Procedure B-7-1 provides technical details for the application of the reasonable use approach. A change in the quality of groundwater on an adjacent property, where the reasonable use is determined to be for drinking water, will be acceptable only where:

i. Quality is not degraded by more than 50% of the difference between background concentrations and the Ontario Drinking Water Standards for non-health related parameters, and
ii. Quality is not degraded by more than 25% of the difference between background concentrations and the Ontario Drinking Water Standards for health-related parameters.

10.2. Background Water Quality

Background concentrations are the site-specific values that represent the quality of groundwater prior to any contamination from landfill activities. The background groundwater quality was determined using the water quality data from monitoring well TW-4, which is upgradient of the landfill footprint (Figure 4). Since the inception of the sampling program, the groundwater chemistry reported for well TW-4 has been relatively consistent with no indication of leachate influence. As a result, groundwater quality results collected from this location between 2000 and 2012, provided in Appendix E, were used to calculate the average background concentrations for each indicator parameter to aid in the determination of RUC values.

In general, the shallow background groundwater quality at the Site can be described as having low concentrations of chloride (i.e., less than 5 mg/L), a slightly basic pH in the range of 8.0, and conductivity typically in the range of 400 to 600 µS/cm. The average hardness and alkalinity concentrations are 271 mg/L and 262 mg/L, respectively, which is representative of a carbonate-rich groundwater system.

10.3. Calculation of Objective Levels

Table 2 identifies the concentrations of groundwater quality indicator parameters used for evaluating the acceptable level of contaminant concentrations at the site boundary. Background concentrations (Cb) are the site-specific values (discussed in the previous section). The provincial maximum concentrations (Cr) are identified in the Technical Support Document for Ontario Drinking Water Standards Objectives and Guidelines (June 2006), referred to herein as the ODWS.

Acceptable concentrations at the site boundary (Cm) (herein referred to as the Reasonable Use Criteria (RUC)), are calculated from MECP Procedure B-7-1 using the following formula.

$$\mathbf{Cm = Cb + x(Cr - Cb)}$$

Where:
Cm = Maximum concentration acceptable in groundwater beneath an adjacent property
Cb = Background concentration
Cr = Maximum concentration that should be present in groundwater for domestic consumption according to the ODWS
X = 0.5 for non-health related parameters (AO/OG) and 0.25 for health-related parameters (MAC & IMAC)

AO = Aesthetic Objective
OG = Operational Guideline
MAC = Maximum Acceptable Concentration, Parameters Related to Health
IMAC = Interim Maximum Acceptable Concentration, Parameters Related to Health

It is noted that if background concentrations exceed the ODWS, the objective level is to be set at the background concentration, as outlined by Procedure B-7-1. A summary of the 2024 analytical results, compared to the RUC and ODWS, is provided in Table 2.

To determine if leachate is impacting groundwater, individual indicator parameters were evaluated in conjunction with other indicator parameters and concentration trends. Wells with elevated and stable concentrations of the identified naturally elevated constituents, that show no increases in other leachate indicator parameters, are deemed un-impacted by landfill leachate. Additionally, comparison of known leachate impacted groundwater is compared to the groundwater chemistry at locations with naturally elevated concentrations to determine if leachate contributes to the elevated concentrations measured.

10.4. Surface Water – Provincial Water Quality Objectives

The purpose of surface water quality management at the Site is to achieve the requirements established in the Provincial Water Quality Objectives (PWQO) set out by the MECP. The PWQO were established to ensure that surface waters are of a quality that is satisfactory for aquatic life and recreation. Areas that have water quality surpassing the PWQO requirements are to be maintained at or above the applicable objectives. Areas that have water quality that does not presently meet the PWQO are not to be degraded any further and are to be upgraded if practical. The 2024 surface water results compared to the PWQO are presented in Table 3.

A background surface water quality monitoring location is not available at the Site as there are no on-site surface water features to provide this data. Therefore, it should be recognized that natural surface water quality in the area may exceed specific parameters of the PWQO that may not be influenced by leachate. Therefore, an evaluation of several leachate indicator parameters should be conducted to determine the potential influence from landfill leachate.

11. MONITORING RESULTS AND DISCUSSION

11.1. Leachate Generation

Leachate is produced when surface water percolates down through refuse resulting in impacted water that has the potential to migrate along the surface or in the ground. Landfill derived leachate that enters into the groundwater and/or surface water is often attenuated by natural mechanisms along the water migration pathway. The attenuation of leachate can occur by dilution, biologic activity, and geochemical mechanisms.

To determine the presence of potential impacts from leachate, several indicator parameters are monitored, and a trend analysis is conducted to determine changes in water quality over time. The following sections discuss the potential impacts to groundwater and surface water, with a focus on the water quality crossing the property boundaries and compliance with the Reasonable Use Criteria (RUC).

The results of the most recent groundwater and surface water monitoring and compliance with the RUC and PWQO, as applicable, are provided in Table 2 and Table 3, respectively. Historical groundwater and surface water sampling results and graphical trends of indicator parameters are included in Appendix E and Appendix F, respectively.

11.2. Groundwater

11.2.1. North Boundary Condition

The northern property boundary is located approximately 100 m upgradient from the landfill, as shown on Figure 2. Groundwater quality north of the landfill area is monitored at well TW-4, which is located approximately 30 m northwest of the approved limit for landfilling. As discussed in Section 10.2, well TW-4 is used as the background monitoring well. Groundwater chemistry at this location has not exhibited influence from landfill-derived leachate and based on its upgradient location, is expected to remain un-impacted.

11.2.2. South Boundary Condition

The southern compliance limit is generally considered to be hydraulically downgradient of the landfill and is located approximately 250 m south of the landfill footprint. Groundwater quality to the south of the landfill is monitored at well TW-1, which is located within approximately 40 meters of the landfill footprint, and TW-2, which is situated directly down-gradient and within 10 meters of the landfill.

Leachate production is typically greatest directly beneath the landfill and at the perimeter of the landfilled area. As would be expected due to the proximity of TW-2 to the fill area, this monitoring location has historically shown the greatest influence from landfill leachate. Relative to background concentrations, groundwater at TW-2 has consistently been noted to have a high conductivity, averaging approximately 1,100 µS/cm, and elevated concentrations of hardness, alkalinity, chloride, sulphate, sodium, potassium and, to a lesser degree, ammonia and TKN. As a result, these parameters are considered to be the primary leachate indicator parameters for the Lindsay Landfill Site.

In 2024, RUC exceedances included hardness, alkalinity, and DOC. However, based on a review of the historical water quality results from this monitoring location, periodic exceedances for DOC and iron do not appear to directly correlate with the degree of leachate influence, as indicated by other more prominent leachate indicators. Therefore, iron and DOC concentrations in the shallow groundwater are interpreted to be naturally occurring within the wetland areas of the Site and are not considered to reflect leachate influence and/or strength.

In general, concentrations for the majority of leachate indicator parameters are relatively stable (Appendix E). With the exception of hardness and alkalinity, concentrations have typically remained below the RUC for the Site. Increased concentrations are interpreted to reflect the proximity of the landfill to TW-2. In any case, considering groundwater quality directly downgradient of the landfill at TW-2 and the additional distance to the southern compliance boundary of greater than 200 meters, the potential for off-site impacts to the south is considered to be very low.

Well TW-1 is located within approximately 40 meters of the landfill footprint and is interpreted to be situated outside of the primary area of influence from the landfill and is not typically directly influenced by landfill operations. In general, the groundwater chemistry at monitoring well TW-1 has been similar to background and does not appear to have been significantly influenced by leachate. A slight increase in chloride concentrations has generally been observed since 2015 (refer to graph provided in Appendix E). However, chloride concentrations have typically remained below 15 mg/L. An slight increase in sulphate concentrations has also been observed.

11.2.3. East Boundary Condition

Groundwater

The easterly compliance limit is located greater than 200 meters east of the landfill footprint and is considered to be hydraulically cross-gradient. Groundwater quality is monitored at well TW-3, which is situated within approximately 20 meters of the landfill footprint.

In general, the majority of the parameters at well TW-3 meet the RUC. Similar to the groundwater quality in the background well, RUC exceedances are typically noted for hardness, with iron and DOC concentrations periodically exceeding the RUC. As previously discussed, as DOC and iron concentrations do not appear to directly correlate with the degree of leachate influence, these parameters are not considered to be site-specific leachate indicators. It is noted that in 2024 chloride concentrations were reported to be 199 mg/L, exceeding the RUC of 126 mg/L. In the absence of other changes to the groundwater chemistry at this location, it was unclear whether this is related to landfill leachate influence or representative of lab error. In 2024, consistent with historical results, in 2024 the chloride concentration was reported to be 8.9 mg/L.

A review of the primary leachate indicator parameters for the Site indicates that the groundwater quality at TW-3 generally exhibits minor influence from landfill leachate, as suggested by the slightly elevated concentrations of alkalinity, chloride, sodium, and potassium. However, although variable, the water quality at this monitoring location has been relatively stable since the inception of monitoring in 2000, as shown in the trend graph provided in Appendix E. In consideration of the additional distance to the compliance boundary to the east of greater than 200 meters, the potential for off-site impacts to the east is considered to be very low.

Robbins Well

A domestic well is located approximately 300 m to the east, across Ira Lake Road, and hydraulically cross-gradient from the existing landfill, as shown on Figure 2. Based on a well record search, an MECP Well Record has not been registered for this property. The property is owned by the Municipality and no other residences are located nearby. The well is being used by the resident as a source of potable and non-potable water. Based on the reported groundwater quality, the groundwater is mineralized and is interpreted to be reflective of water extracted from the carbonate bedrock aquifer systems in this region.

In 2024, a sample was collected from the domestic well in conjunction with the fall sampling. Consistent with historical results, while the majority of leachate indicator parameter concentrations are similar to background, the concentrations of chloride and sodium are significantly higher, often exceeding the RUC of 126 mg/L and 100 mg/L, respectively. However, based on the distance between the landfill footprint and the Robbins Well (i.e., approximately 300 m), the direction of groundwater flow, and the general absence of other leachate indicators, the high sodium and chloride concentrations are not suspected to be derived from landfill leachate. Due to the location of the well between the convergence of Ira Lake Road and Provincial Highway No.6 (Figure 2), the elevated sodium and chloride concentrations are interpreted to be associated with road salting activities in the area.

Comparison to drinking water quality standards indicates that the sodium concentrations generally remain below the ODWS aesthetic objective of 200 mg/L, with concentrations generally reported to range between 100 mg/L and 200 mg/L. In addition, chloride concentrations are reported to range between approximately 100 mg/L and 300 mg/L, at times exceeding the ODWS aesthetic objective of 250 mg/L.

With respect to the drinking water quality objectives, according to the Technical Support Document for Ontario's Drinking Water Quality Standards, Objectives and Guidelines (June 2006), *'aesthetic objectives are established for parameters that may impair the taste, odour, or colour of water or which may interfere with good water quality control practices'.*

11.2.4. West Property Condition

The western property boundary is located greater than 250 meters west of the landfill footprint and is considered to be hydraulically cross-gradient. Due to the distance between the landfill and the compliance limit to the west, as well as the inferred southeasterly groundwater flow direction, the migration of leachate-impacted groundwater in a westerly direction is not anticipated.

Monitoring well TW-1 monitors groundwater quality at a location that is slightly to the west of the landfill footprint, in a generally downgradient to cross-gradient direction. As previously discussed, groundwater quality at this monitoring location is similar to background suggesting limited, if any, migration of leachate-impacted groundwater to the west.

11.3. Surface Water

An intermittent creek, which originates from a spring, flows in an easterly direction, and dissipates into a wetland area southeast of the landfill. Spring Creek, which generally flows in a southwesterly direction through the wetland area, is located greater than 300 m to the east and south of the landfill, at its closest point (Figure 2).

The spring has been observed to originate from a bedrock outcrop located approximately 10 meters east of the landfill. Surface water quality within the intermittent creek is monitored at two locations including SW-1 and SW-3, where shown on Figure 4. SW-1 is collected at the headwater of the small intermittent creek, approximately 10 to 15 meters east of the landfill footprint, and SW-3 is located approximately 50 meters downstream of SW-1.

Due to the feature's origin (i.e., spring), background surface water quality data is not available. Therefore, to evaluate potential leachate impacts to surface water, water quality is compared to background water quality from the shallow overburden well (i.e., TW-4).

Based on a comparison of the past surface water quality at SW-1 to background, the surface water originating from the spring appears to be exhibiting influence from landfill leachate. Similar to the suite of leachate indicators noted at TW-2, and consistent with historical results, in 2024 the concentrations of hardness, alkalinity, chloride, sulphate, sodium, potassium, ammonia and TKN were noted to be elevated at this location. In addition, historical results note periodic exceedances for phenols, unionized ammonia, total phosphorus and various metals. Phosphorus, boron and iron concentrations were reported to exceed the PWQO during the reporting period.

In 2024, surface water samples were collected from SW-3 in the spring only. Historical monitoring results indicate that this monitoring location has generally exhibited similar to marginally less influence from leachate than that noted at SW-1. Concentrations of hardness, alkalinity, chloride, sodium, sulphate, and potassium are typically in the range of those at noted at SW-1. However, the nutrient parameter concentrations are typically lower at SW-3. Based on historical results, the concentrations of indicator parameters have remained relatively stable at SW-3. Similar to SW-1, phosphorus, boron, and iron concentrations were reported to exceed the PWQO during the reporting period.

11.4. Water Quality Summary

Groundwater

Based on the analytical results from monitoring well TW-4, the background groundwater at the site can be described as being highly mineralized with concentrations of hardness frequently exceeding the RUC and intermittent RUC exceedances for iron and DOC. The analytical data indicates that minor influence from leachate is present at well TW-3 and, more recently, at TW-1 and moderate influence from leachate is present at well TW-2. Based on the groundwater quality at these wells, the main leachate indicator parameters at the Site are hardness, alkalinity, chloride, sulphate, sodium, potassium.

Based on the relatively minor to moderate influence of landfill leachate at TW-1, TW-3 and TW-2 and the distance to the compliance limits to the south, east and west of the landfill footprint of greater than 200 meters, off-site impacts due to landfill leachate are not anticipated. The groundwater quality reported for well TW-2 will continue to be closely monitored to assess future trends.

Surface Water

Surface water drains to the east then southeast of the site via an intermittent creek, which discharges into a wetland southeast of the landfill. No surface water outflow from the wetland in connection with the creek is apparent. Based on the reported analytical results, the water chemistry at SW-1 and SW-3 is exhibiting minor to moderate influence from leachate.

Overall, the water quality at SW-3 has historically exhibited similar, to marginally less, influence from leachate than at SW-1, suggesting that some attenuation is occurring. A review of historical data indicates that the leachate indicator parameter concentrations have been relatively stable at SW-1 with some seasonal variation. Given the relatively stable leachate parameter concentrations at surface water location SW-1, it is anticipated that concentrations at SW-3, which is located further downgradient, would likely show a similar trend. Provided the distance to the property boundary, the risk for off-site impacts via surface water is considered to be low.

It is noted that the surface water locations have frequently been found to be dry. In consideration of the MECP correspondence dated July 24, 2019, if a lack of flow is encountered, it is recommended that an additional attempt(s) to collect surface water samples be made after a period of wet weather when flowing water conditions are more likely.

12. TRIGGER MECHANISMS AND CONTINGENCY PLAN

In 2006, trigger mechanisms were established for the site, as outlined in the Trigger Mechanisms and Contingency Plan (Gamsby and Mannerow, 2006) (the Plan). The report describes the conditions (i.e., trigger levels and locations) under which contingency measures may be required and recommends the corresponding contingency and remedial action plans for the Site. The primary goal of the Contingency Plan is to provide a course of action in the event that the monitoring program indicates a potential for off-site impacts related to the production and migration of leachate.

Summaries of the groundwater and surface water trigger locations, parameters, and levels, compared to the recent monitoring results, are provided in Table 4 and Table 5, respectively, and are discussed below. A trigger exceedance is considered to occur when trigger levels are exceeded for three consecutive monitoring events. The trigger levels for the site are very conservative as they were established prior to the acquisition of additional lands that significantly extended the buffer. The reader is referred to the aforementioned report for more detail pertaining to the trigger mechanisms and for a description of the contingency and remedial action plans for the Site.

The trigger locations include groundwater monitoring wells TW-1 and TW-2, located directly downgradient and to the southwest of the landfill footprint, and surface water monitoring location SW-3. Although an exceedance of the trigger level for DOC is periodically reported for TW-1, the contingency plan is only triggered following three consecutive exceedances. Furthermore, DOC and iron concentrations, which periodically exceed the RUC at all monitoring locations, are considered to be naturally occurring. As a result, DOC and iron are not considered to be indicators of leachate impacts.

With respect to surface water, consistent with historical results, trigger level exceedances for phosphorus, boron and iron were noted in 2024. The consistent (or periodic) exceedances of the PWQO for boron would technically be considered a trigger. However, similar to iron concentrations, based on a review of the historical water quality results from the surface water monitoring locations, concentrations of boron do not appear to directly correlate with the degree of leachate influence, as indicated by other more prominent leachate indicators. Therefore, boron and iron are interpreted to be naturally occurring within the wetland areas of the Site and are not considered to reflect leachate influence and/or strength.

13. METHANE GAS PRODUCTION

Landfill gas is primarily produced by the bacterial decomposition of organic materials after the capping and closure of a landfill has been completed and is combustible if it accumulates to concentrations greater than the lower explosive limit (LEL). Landfill gas tends to migrate laterally from the landfill area when the gas is unable to escape vertically through the ground surface via dry relatively permeable soils, commonly due to an overlying low permeability geologic strata or when the ground surface is frozen.

Soils in the vicinity of the Lindsay Landfill Site are limited in thickness (i.e., less than 2.2 meters) and have a moderate to high permeability that would permit the venting of gases to the atmosphere. In addition, the landfill is primarily constructed above grade and the vadose zone around the perimeter of the waste is relatively thin, limiting the potential pathway for methane gas migration. Therefore, at the Lindsay Landfill Site methane gas is vented passively to the surrounding atmosphere.

Furthermore, the closest receptor of methane gas is located greater than 300 m from the Site. At this time, the re-use storage building, and operator weigh scale building, are both sufficiently separated from the landfill footprint. Therefore, methane gas is not thought to be of concern at the Site.

14. CONCLUSIONS

1. The total airspace capacity of the 1.23-ha landfill area approved under the PDO (April 2006) is approximately 67,300 m^3, of which 57,900 m^3 is available for waste and daily cover.
2. The average fill rate between 2020 and 2024 was calculated to be approximately 1,580 m^3/yr. At the five-year average fill rate, the remaining site life is estimated to be about 9 years.
3. Based on a comprehensive survey of the fill area at the Lindsay Landfill Site completed in 2022 and annual surveys of the active area of landfilling, the remaining capacity for waste and daily cover is estimated to be 15,000 m^3.
4. Groundwater quality data from monitoring well TW-4 indicates that the background water has naturally elevated concentrations of hardness, consistently in exceedance of the ODWS, and periodic exceedances of the RUC for DOC and iron.
5. Relatively minor to moderate impacts from leachate continue to be evident at TW-2 and TW-3, with limited, if any, leachate influence noted at TW-1. The leachate indicator parameter concentrations are relatively stable at TW-2 and TW-3. Based on the distance to the compliance limits to the south, east and west of the landfill footprint of greater than 200 meters, off-site impacts due to landfill leachate are not anticipated.
6. The surface water quality at SW-1 and SW-3 exhibits minor to moderate influence from leachate. Generally, the overall water chemistry at SW-3 exhibits similar to marginally less influence from leachate than at SW-1, indicating a level of attenuation is occurring upstream. Historic data indicates that leachate indicator parameter concentrations have generally remained relatively stable with some minor variations. Considering the relatively minor influence of leachate, the relative stability of the surface water chemistry, and the distance to the property boundary, off-site impacts are not anticipated.

15. RECOMMENDATIONS

Based on the findings of this report and the conditions of the Approval, the following recommendations are provided:

1. Care continues to be taken to ensure that all non-wood wastes are removed from the burn pile prior to burning and that cold ashes continue to be removed from the burning area. The site supervisor is responsible for maintaining the burning operations on-site.
2. Completion of a topographic survey at the site in the fall of 2025 to update site conditions, the annual fill rate, and the remaining landfill capacity.
3. The Municipality continue to employ the area ramp method to ensure optimal waste compaction and increased site life.
4. Cover material be applied on regular basis to inhibit leachate generation and prevent litter and scavenging.
5. The Municipality continue to implement the litter pick-up schedule (enclosed in Appendix B) and maintain the record keeping requirements outlined in the Approval.
6. If a lack of surface water flow is encountered, it is recommended that an additional attempt(s) to collect surface water samples be made after a period of wet weather when flowing water conditions are more likely.
7. We recommend that the established monitoring program be continued, as outlined below:

Table 15-1. Lindsay Landfill Site – Recommended Monitoring Program for 2025

SAMPLING LOCATIONS	ANALYTICAL PARAMETERS
GROUNDWATER (Fall Only)	
TW-1 TW-2 TW-3 TW-4 Robbins Well	Alkalinity, Conductivity, pH, Hardness, TKN, Ammonia, DOC, Phenols, Chloride, Nitrate, Nitrite, Sulphate, Phosphorus, Calcium, Iron, Magnesium, Potassium and Sodium
SURFACE WATER (Spring and Fall)	
SW-1 SW-3	Alkalinity, Conductivity, pH, Hardness, TKN, Ammonia, DOC, Phenols, Chloride, Nitrate, Nitrite, Sulphate, Phosphorus, and Sulphide. Metals including Sodium, Potassium, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, and Zinc. Field Temperature

Tables

TABLE 1
LANDFILL VOLUME CAPACITY (m^3)
LINDSAY LANDFILL SITE

	2018	2019	2020	2021	Estimated Remaining Capacity Adjusted to Final Contours was measured to be 28,000 cubic meters (As of November 2022)	2022	2023	2024
Total Approved Capacity								
Total Capacity for Waste and Daily Cover	57,900	57,900	57,900	57,900		57,900	57,900	57,900
Total Capacity for Topsoil	1,900	1,900	1,900	1,900		1,900	1,900	1,900
Total Capacity for Final Cover	7,500	7,500	7,500	7,500		7,500	7,500	7,500
Total Air Space Capacity	67,300	67,300	67,300	67,300		67,300	67,300	67,300
Capacity Used During Year (1)								
Capacity Used for Waste and Daily Cover	1,650	1,590	1,300	1,300		1,500	2,155	1,645
Volume of Topsoil Used	0	0	0	0		0	0	0
Capacity Used for Final Cover	0	0	0	0		0	0	0
Total Capacity Used	1,650	1,590	1,300	1,300		1,500	2,155	1,645
Volume Filled at End of Year								
Volume of Waste and Daily Cover	35,670	37,260	38,560	39,860		39,100	41,255	42,900
Volume of Topsoil	40	40	40	40		40	40	40
Volume of Final Cover	160	160	160	160		160	160	160
Total Volume Filled	35,870	37,460	38,760	40,060		39,300	41,455	43,100
Remaining Capacity at End of Year (2) (3)								
Capacity for Waste and Daily Cover	22,230	20,640	19,340	18,040		18,800	16,645	15,000
Capacity for Topsoil	1,860	1,860	1,860	1,860		1,860	1,860	1,860
Capacity for Final Cover	7,340	7,340	7,340	7,340		7,340	7,340	7,340
Total Remaining Capacity	31,430	29,840	28,540	27,240		**28,000**	25,845	24,200
Remaining Site Life (yrs)								
At 5-Year Average Fill Rate (1,580 m^3/yr)	14.1	13.1	12.2	11.4		11.9	10.5	9.5
At Maximum Recorded Fill Rate (2,155 m^3/yr)	10.3	9.6	9.0	8.4		8.7	7.7	7.0

NOTES:

1. Capacities reported since 2009 were calculated using elevations obtained from annual topographic surveys of the active landfilling areas conducted in the fall of each year.
2. The remaining capacity at the end of year for 2022 was determined to be 28,000 m^3 using the topographical survey data representing the elevations of the landfill footprint for the end of 2022 and the final contours.

TABLE 2
GROUNDWATER QUALITY SUMMARY - 2024

Parameter	Units	Back ground	ODWS		RUC	Background	Downgradient		Cross-gradient	Offsite
						TW-4	TW-1	TW-2	TW-3	Robbins Well
Sample Date						12-Nov-24	12-Nov-24	12-Nov-24	12-Nov-24	12-Nov-24
Conductivity	uS/cm	470	NV	NA	NA	520	755	1,130	619	1,130
pH	Unitless	NA	6.5-8.5	OG	6.5-8.5	7.96	7.83	7.80	7.85	8.04
Hardness	mg/L	272	80-100	OG	272	264	**366**	**430**	**310**	223
Alkalinity	mg/L	257	30-500	OG	379	305	**426**	**494**	361	320
Chloride	mg/L	1.85	250	AO	126	3.71	12.5	44.6	8.86	**183**
Nitrate	mg/L	0.05	10.0	MAC	2.53	<0.05	0.23	<0.05	<0.05	<0.05
Nitrite	mg/L	0.03	1.0	MAC	0.27	<0.05	<0.05	<0.05	<0.05	<0.05
Sulphate	mg/L	8.91	500	AO	254	12.0	41.9	118	8.69	17.1
Sodium	mg/L	1.00	200	AO	100	1.13	11.5	29.1	5.43	**103**
Potassium	mg/L	0.32	NV	NA	NA	<0.50	1.7	6.55	1.4	<0.50
Iron	mg/L	0.10	0.3	AO	0.20	<0.020	<0.020	0.025	0.022	0.021
Phosphorus	mg/L	0.01	NV	NA	NA	0.08	0.06	0.11	0.08	0.06
DOC	mg/L	3.18	5.0	AO	4.09	2.2	**5.5**	**8.9**	**6.4**	3.4
Phenols	mg/L	0.0005	NV	NA	NA	<0.001	<0.001	<0.001	<0.001	<0.001
Ammonia	mg/L	0.04	NV	NA	NA	<0.02	0.14	1.01	0.26	<0.02
Calcium	mg/L	NA	NV	NA	NA	67.1	82.2	103	65.9	55.5
Magnesium	mg/L	NA	NV	NA	NA	23.4	39.1	42.0	35.4	20.4
Boron	mg/L	NA	5	IMAC	1.25	<0.010	0.28	0.53	0.063	0.016

Notes:

1. ODWS = Ontario Drinking Water Standards (June 2006)
2. RUC = Reasonable Use Criteria where AO = Aesthetic Objective; OG = Operational Guideline; MAC = Maximum Acceptable Concentration; IMAC = Interim Maximum Acceptable Concentration.
3. Background is the average of the data collected between 2000 and 2012 from well TW-4.
4. Values in bold represent results greater than the Reasonable Use Criteria (RUC).
5. Shaded values represent results greater than the ODWS.
6. Samples analyzed by AGAT Laboratories, Ltd.
7. Results presented in mg/L (milligrams per litre) unless otherwise specified.

TABLE 3
SURFACE WATER QUALITY SUMMARY - 2024

Parameter / Sampling Date	Units mg/L	PWQO	SW-1		SW-3
			30-Apr-24	12-Nov-24	30-Apr-24
Conductivity	uS/cm	NV	828	798	829
pH	Unitless	6.5 - 8.5	8.08	7.91	8.21
Hardness	mg/L	NV	219	368	234
Alkalinity	mg/L	See Note	396	425	400
Chloride	mg/L	NV	27.6	27.6	28.8
Nitrate	mg/L	NV	0.72	<0.05	0.64
Nitrite	mg/L	NV	<0.05	<0.05	<0.05
Sulphate	mg/L	NV	41.3	36.5	40.9
Sodium	mg/L	NV	23.4	21.8	18.8
Potassium	mg/L	NV	4.80	7.01	3.81
Phosphorus	mg/L	0.03	**0.04**	<0.02	**0.05**
DOC	mg/L	NV	11.4	11.7	11.8
Phenols	mg/L	0.001	<0.001	<0.001	<0.001
Ammonia	mg/L	NV	0.34	0.41	0.02
TKN	mg/L	NV	0.76	0.5	1.04
Sulphide	mg/L	NV	<0.01	<0.01	<0.01
Field Temp.	°C	NA	10	10	10
Un-ionized Ammonia	mg/L	0.02	0.007	0.006	0.001
Antimony	mg/L	0.02	<0.003	<0.003	<0.003
Arsenic	mg/L	0.1	<0.003	<0.003	<0.003
Barium	mg/L	NV	0.033	0.024	0.034
Beryllium	mg/L	1.1	<0.001	<0.001	<0.001
Boron	mg/L	0.2	**0.69**	**0.25**	**0.63**
Cadmium	mg/L	0.0002	<0.0001	<0.0001	0.0001
Calcium	mg/L	NV	NM	NM	NM
Chromium	mg/L	0.0089	<0.003	<0.003	0.003
Cobalt	mg/L	0.0009	<0.0005	<0.0005	<0.0005
Copper	mg/L	0.005	<0.002	<0.002	0.003
Iron	mg/L	0.30	**0.89**	**2.55**	**1.72**
Lead	mg/L	0.025	<0.0005	<0.0005	0.002
Magnesium	mg/L	NV	NM	NM	NM
Molybdenum	mg/L	0.040	0.002	<0.002	0.005
Nickel	mg/L	0.025	<0.003	0.006	0.005
Selenium	mg/L	0.10	<0.002	<0.002	<0.002
Silver	mg/L	0.0001	<0.0001	<0.0001	<0.0001
Thallium	mg/L	0.0003	<0.0003	<0.0003	<0.0003
Vanadium	mg/L	0.006	<0.002	<0.002	0.003
Zinc	mg/L	0.020	<0.020	<0.020	<0.020

Notes:

1. Analytical results presented in mg/L (milligrams per litre) unless otherwise specified.
2. PWQO refers to the Provincial Water Quality Objectives established by the Ministry of the Environment (1994).
3. The PWQO of 0.03 mg/L for phosphorus applies to streams and rivers.
4. Un-ionized ammonia calculated using pH and temperature per PWQO Guidelines.
5. NV = No value specified; NA = Not Applicable
6. Alkalinity should not be decreased by more than 25% of the natural concentration.
7. Values that are shaded and in bold indicate an exceedence of the PWQO.

TABLE 4
COMPARISON OF GROUNDWATER QUALITY AT THE ESTABLISHED TRIGGER LOCATIONS TO THE TRIGGER LEVELS

Indicator Parameter		pH	Hardness	Alkalinity	Chloride	Nitrate	Sulphate	Sodium	Iron	DOC
		(pH units)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Background		7.74	266	245	2.8	0.1	10.1	1.2	0.27	2
ODWS		6.5 - 8.5	500 (AO)	30-500 (OG)	250 (AO)	10 (MAC)	500 (AO)	200 (AO)	0.30 (AO)	5 (AO)
Trigger Levels (RUC*)		6.5 - 8.5	383	373	126	2.6	255	101	0.29	4.0
TW-1	April 14, 2011	7.81	214	204	1.38	<0.05	6.29	0.62	<0.01	**6.0**
	November 1, 2011	7.95	281	283	1.94	<0.05	5.28	0.68	<0.01	**5.3**
	April 11, 2012	8.04	258	262	1.98	<0.05	5.37	0.63	**0.44**	3.7
	November 1, 2012	8.15	282	269	2.73	<0.05	5.18	0.76	0.01	**4.9**
	November 14, 2013	8.07	304	276	0.57	<0.05	0.92	0.69	<0.01	**5.4**
	October 29, 2014	7.80	318	287	8.31	0.18	12.2	3.54	0.01	3.2
	October 15, 2015	7.99	308	301	10	0.14	17	3.74	0.17	2.7
	November 1, 2016	8.29	280	279	5.04	0.12	9.27	1.81	<0.01	3.9
	September 20, 2017	8.09	291	298	6.23	0.14	11.4	2.70	**0.49**	4.0
	November 20, 2018	7.95	296	293	2.18	0.07	5.65	1.08	<0.01	**4.4**
	October 22, 2019	7.79	320	296	10.3	0.21	26.6	6.49	0.03	**5.6**
	October 28, 2020	7.84	306	312	7.93	0.22	19.6	5.18	<0.01	4.0
	May 4, 2021	7.80	349	278	3.17	0.08	6.38	1.45	**0.383**	3.6
	October 6, 2021	7.57	305	290	6.89	0.12	16.7	3.90	<0.010	**30.9**
	September 22, 2022	7.81	247	281	4.83	0.08	13.6	2.04	0.038	**5.6**
	November 28, 2023	7.20	285	340	41.1	<0.05	53.2	3.32	<0.010	2.8
	November 12, 2024	7.96	264	305	3.71	<0.05	12.0	1.13	<0.020	2.2
TW-2 (Chloride Only)	April 14, 2011				56.8					
	November 1, 2011				69.6					
	April 11, 2012				82.3					
	November 1, 2012				91.7					
	November 14, 2013				70.8					
	October 29, 2014				85.1					
	October 15, 2015				88.6					
	November 1, 2016				64.2					
	September 20, 2017				51.4					
	November 20, 2018				47.1					
	October 22, 2019				46.6					
	October 28, 2020				40.5					
	May 4, 2021				34.6					
	October 6, 2021				47.2					
	September 22, 2022				75.9					
	November 28, 2023				32.0					
	November 12, 2024				44.6					

Notes:

1. ODWS = Ontario Drinking Water Standards
2. RUC = Reasonable Use Criteria
3. mg/L = milligrams per litre
4. Three consecutive sample events that exceed the trigger levels initiates the Contingency Plan.
5. Values in Bold and shaded represent concentrations greater than the Trigger Levels.
6. Trigger levels were established in the report entitled *'Trigger Mechanism and Contingency Plan - Lindsay Waste Disposal Site '* (May 2006), prepared by GM BluePlan Engineering (now GEI Consultants).
7. * RUC and Trigger Levels presented in this Table were developed using available data at the time the Plan was developed. Therefore, analytical data collected from 2000 to 2006 was used to calculate the average groundwater concentration and the RUC.

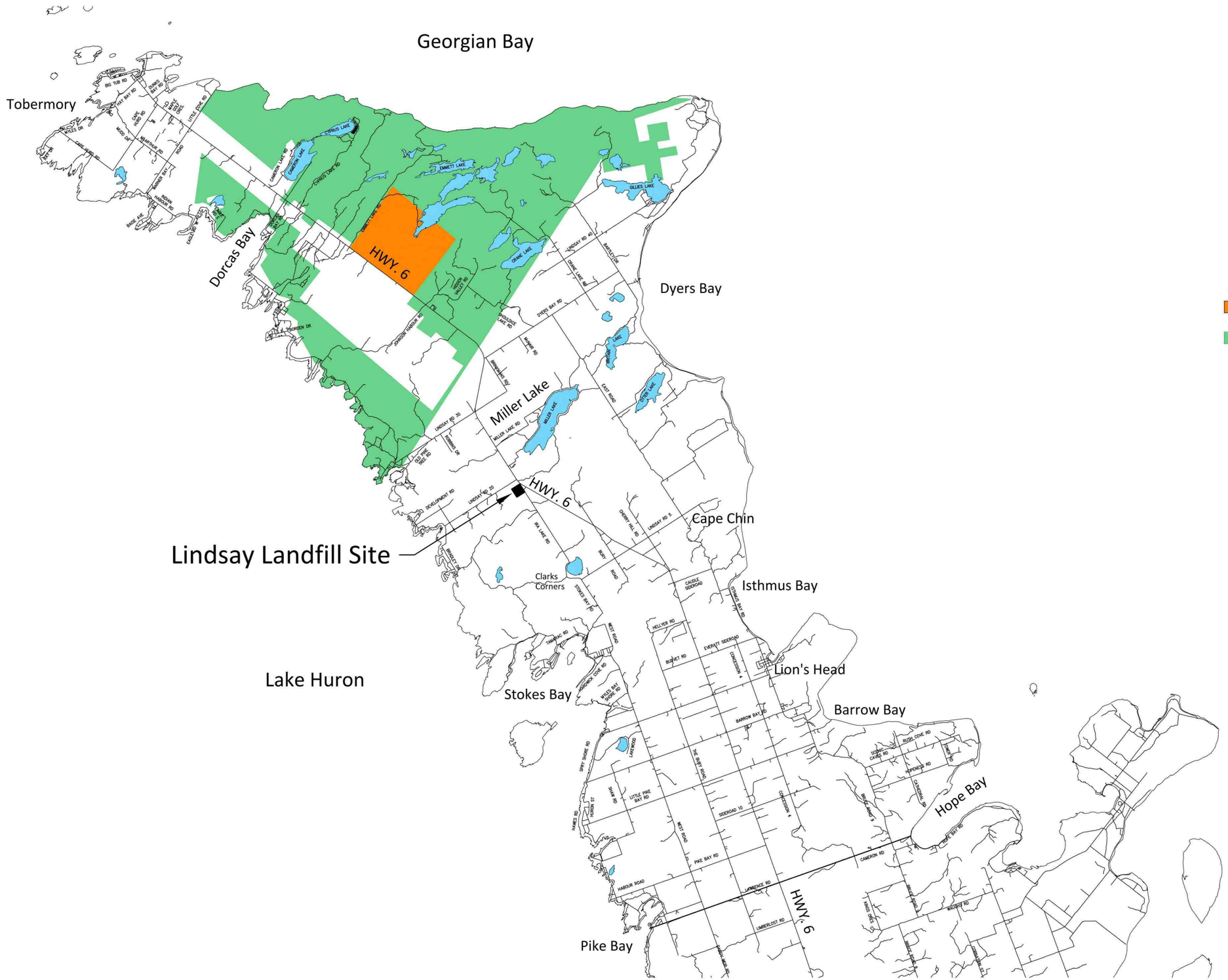
TABLE 5
COMPARISON OF SURFACE WATER QUALITY AT THE ESTABLISHED TRIGGER LOCATIONS TO THE TRIGGER LEVELS

Trigger Location	Trigger	SW-3					SW-1 (Not a Trigger Location - located Upgradient of SW-3)					
Indicator Parameters	Levels	26-Apr-22	27-Sep-22	21-Apr-23	28-Nov-23	30-Apr-24	26-Apr-22	27-Sep-22	21-Apr-23	28-Nov-23	30-Apr-24	12-Nov-24
pH (unitless)	6.5 - 8.5	7.74	7.96	8.03	7.87	8.21	7.81	8.11	7.68	7.87	8.08	7.91
Phosphorus	0.03	<0.02	**0.04**	0.03	**0.30**	**0.05**	<0.02	**0.05**	<0.02	**0.33**	**0.04**	<0.02
Phenols	0.001	**0.029**	0.001	**0.006**	**0.006**	<0.001	**0.032**	**0.004**	**0.007**	**0.005**	<0.001	<0.001
Un-ionized Ammonia	0.02	<0.001	<0.001	0.006	<0.001	0.001	0.002	0.001	<0.001	0.004	0.007	0.006
Antimony	0.02	<0.006	<0.006	<0.006	<0.012	<0.003	<0.006	<0.006	<0.006	<0.006	<0.003	<0.003
Arsenic	0.1	<0.003	<0.003	<0.003	<0.006	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Beryllium	1.1	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	0.20	**0.34**	**0.68**	**0.96**	**0.50**	**0.63**	**0.46**	**0.26**	**0.39**	**0.39**	**0.69**	**0.25**
Cadmium	0.0002	<0.0001	<0.0001	<0.0001	**0.0009**	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	0.0089	<0.003	<0.003	<0.003	**0.028**	0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Cobalt	0.0009	<0.0005	0.0005	<0.0005	**0.0083**	<0.0005	<0.0005	<0.0005	0.0008	<0.0005	<0.0005	<0.0005
Copper	0.005	<0.002	0.004	0.002	**0.032**	0.003	<0.002	0.002	<0.002	<0.002	<0.002	<0.002
Iron	0.30	0.19	**0.57**	**2.23**	**18.4**	**1.72**	**0.35**	**2.4**	**2.05**	**0.82**	**0.89**	**2.55**
Lead	0.025	<0.001	0.001	<0.001	**0.030**	0.002	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
Molybdenum	0.040	<0.001	<0.001	<0.001	<0.002	0.005	<0.001	<0.001	<0.001	<0.001	0.002	<0.002
Nickel	0.025	<0.003	<0.003	<0.003	**0.031**	0.005	<0.003	<0.003	<0.003	0.013	<0.003	0.006
Selenium	0.10	0.004	<0.002	<0.002	<0.004	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Silver	0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium	0.0003	<0.0003	<0.0003	<0.0003	<0.0006	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Vanadium	0.006	<0.001	0.002	<0.001	**0.024**	0.003	<0.001	0.001	<0.001	<0.001	<0.002	<0.002
Zinc	0.02	<0.020	<0.020	<0.020	**0.088**	<0.020	<0.020	<0.020	**0.062**	<0.020	<0.020	<0.020

Notes:

1. Analytical results presented in mg/L (milligrams per litre) unless otherwise specified.
2. Values shaded and in bold exceed the trigger level.
3. Values in Italics indicates lab detection limit is higher than the PWQO.

Figures



2402868

Part Lots 18, 19 & 20, Conc. 3 W.B.R.

Municipality of Northern Bruce Peninsula

LEGEND

- FIRST NATION LANDS
- NATIONAL, PROVINCIAL PARKS & RESERVES

NOT TO SCALE

APRIL 2025

SITE LOCATION MAP

LINDSAY LANDFILL

Figure No. 1

GEI Consultants Canada

FILE:C:\AutoCAD Drawings\2402868 Lindsay AMR Figures.dwg LAYOUT:FIG 1-Site Location Map
LAST SAVED BY:Kenboe3954, 4/29/2025 2:10:28 PM PLOTTED BY:Boers, Ken 4/29/2025 2:11:39 PM

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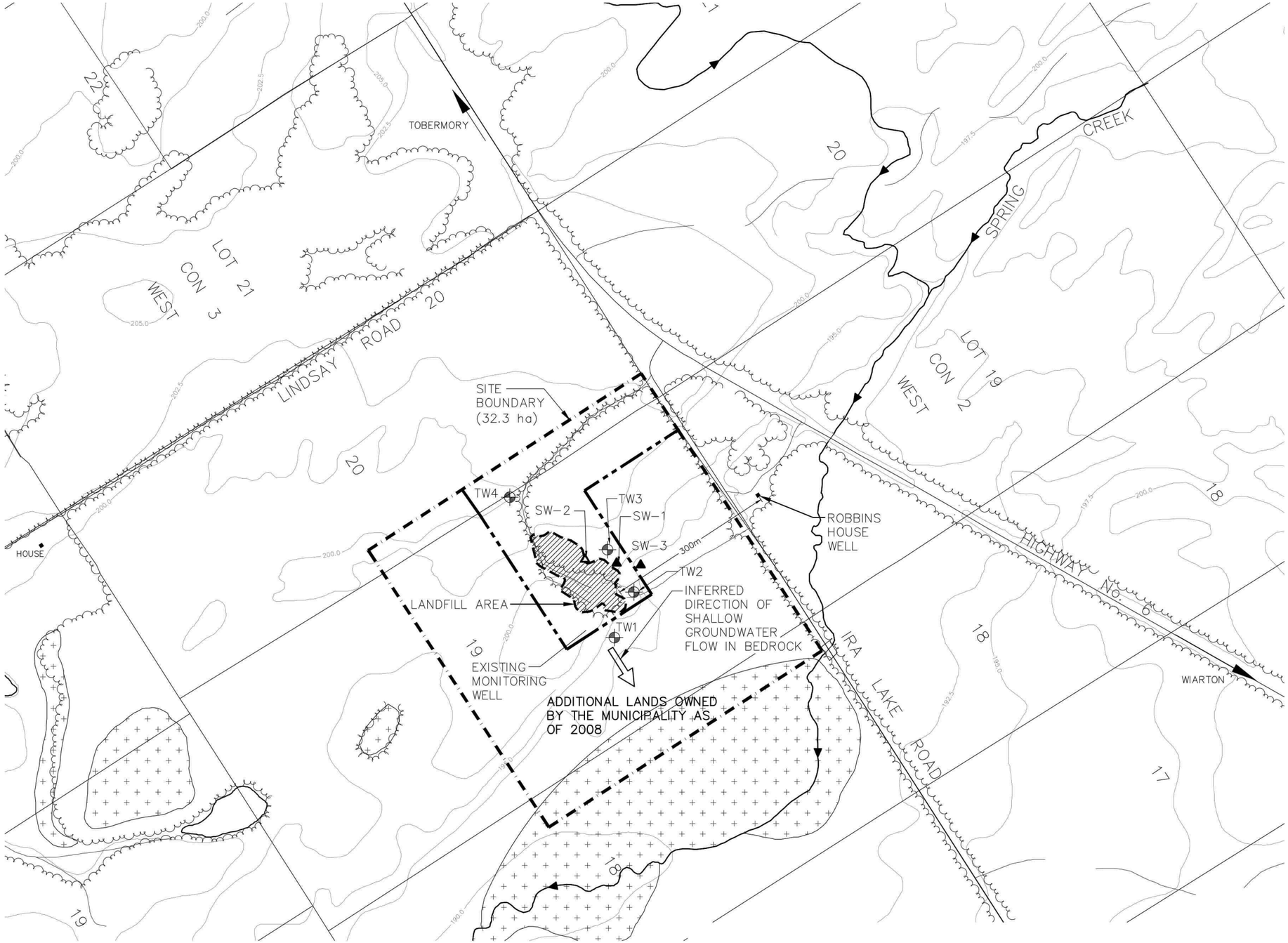
Part Lots 18, 19 & 20, Conc. 3 W.B.R.
Municipality of Northern Bruce Peninsula



LEGEND

- FORMER SITE BOUNDARY
- EXISTING SITE BOUNDARY
- APPROXIMATE AREA OF EXISTING LANDFILL
- WATERCOURSE
- EXISTING TREELINE
- TW4 — MONITORING WELL
- SW-1 — ACTIVE SURFACE WATER MONITORING STATION
- SW-2 — FORMER SURFACE WATER MONITORING STATION
- EXISTING WETLAND

SCALE = 1:7500
APRIL 2025

SITE LAYOUT

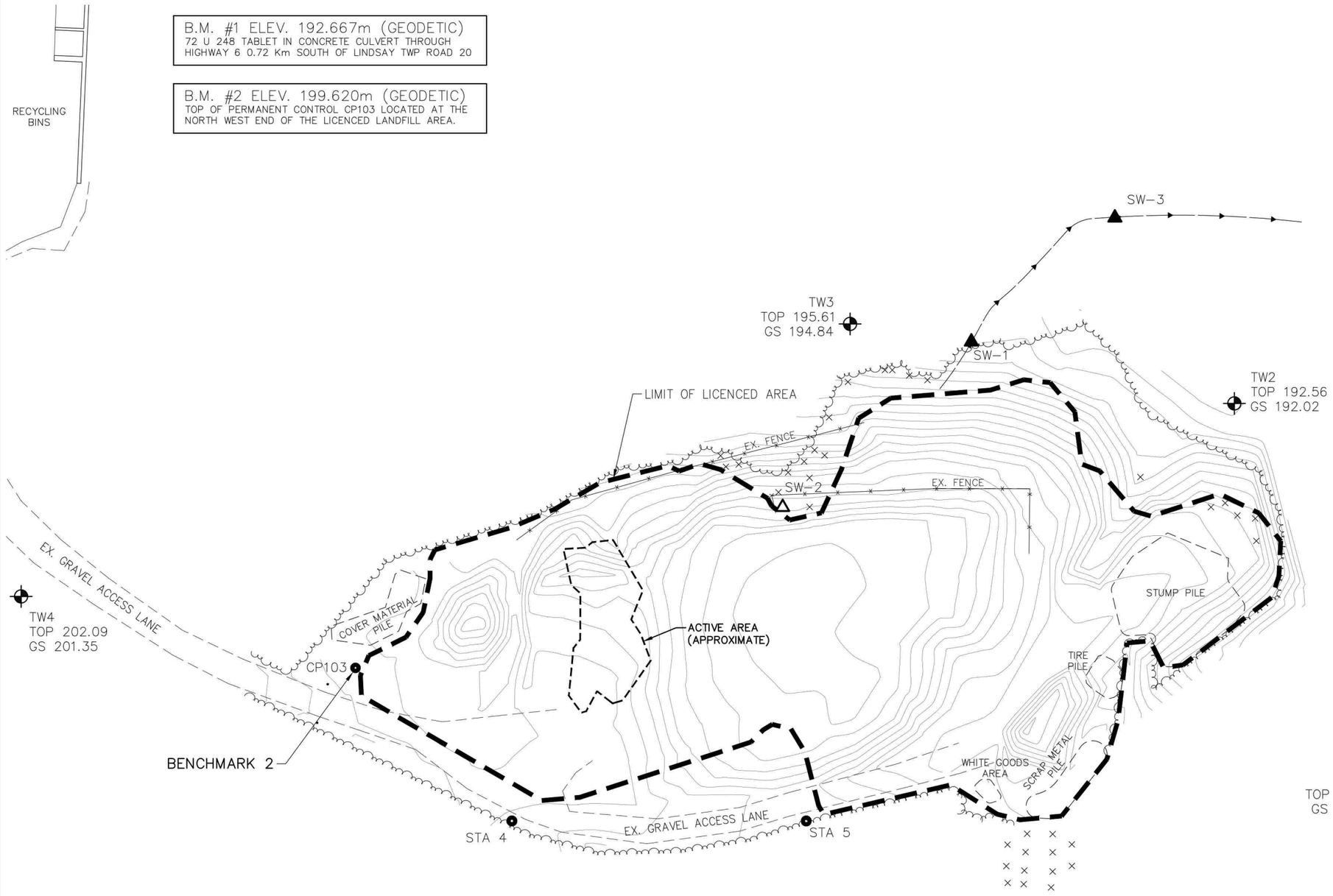
LINDSAY LANDFILL

Figure No. 2

GEI Consultants Canada

B.M. #1 ELEV. 192.667m (GEODETIC)
72 U 248 TABLET IN CONCRETE CULVERT THROUGH HIGHWAY 6 0.72 Km SOUTH OF LINDSAY TWP ROAD 20

B.M. #2 ELEV. 199.620m (GEODETIC)
TOP OF PERMANENT CONTROL CP103 LOCATED AT THE NORTH WEST END OF THE LICENCED LANDFILL AREA.



2402868
Part Lots 18, 19 & 20, Conc. 3 W.B.R.
Municipality of Northern Bruce Peninsula

LEGEND

	FORMER PROPERTY LINE
	APPROXIMATE LIMIT OF EXISTING LANDFILL
	EXISTING DITCH, SWALE
	EXISTING TREELINE
×	BEDROCK OUTCROPS
▲ SW-1	ACTIVE SURFACE WATER MONITORING STATION
△ SW-2	FORMER SURFACE WATER MONITORING STATION
TW4	MONITORING WELL
CP/STA	SITE CONTROL
TOP	MEASURING POINT (TOP OF PVC)
GS	GROUND SURFACE

NOTES

1. THE INFORMATION SHOWN HERE WAS OBTAINED FROM A DRAWING BY HENDERSON PADDON AND ASSOCIATES LIMITED, DATED JUNE 2005. ACTIVE AREA LOCATION DERIVED FROM FIELD INVESTIGATION ON APRIL 16, 2025, BY GEI CONSULTING CANADA, LTD.
2. LOCATION OF PROPERTY LINES ARE APPROXIMATE ONLY.
3. CURRENT BRUSHPILE AND FILL SPECIFIC LOCATIONS ARE APPROXIMATE ONLY.
4. FIGURES WERE ADJUSTED IN 2022 TO SUIT UTM COORDINATES. THE ELEVATION ACROSS THE SITE WAS ADJUSTED TO REFLECT THE RESULTS OF THE SURVEY.

SCALE = 1:1000
APRIL 2025

SITE LAYOUT & EXISTING CONDITIONS

LINDSAY LANDFILL

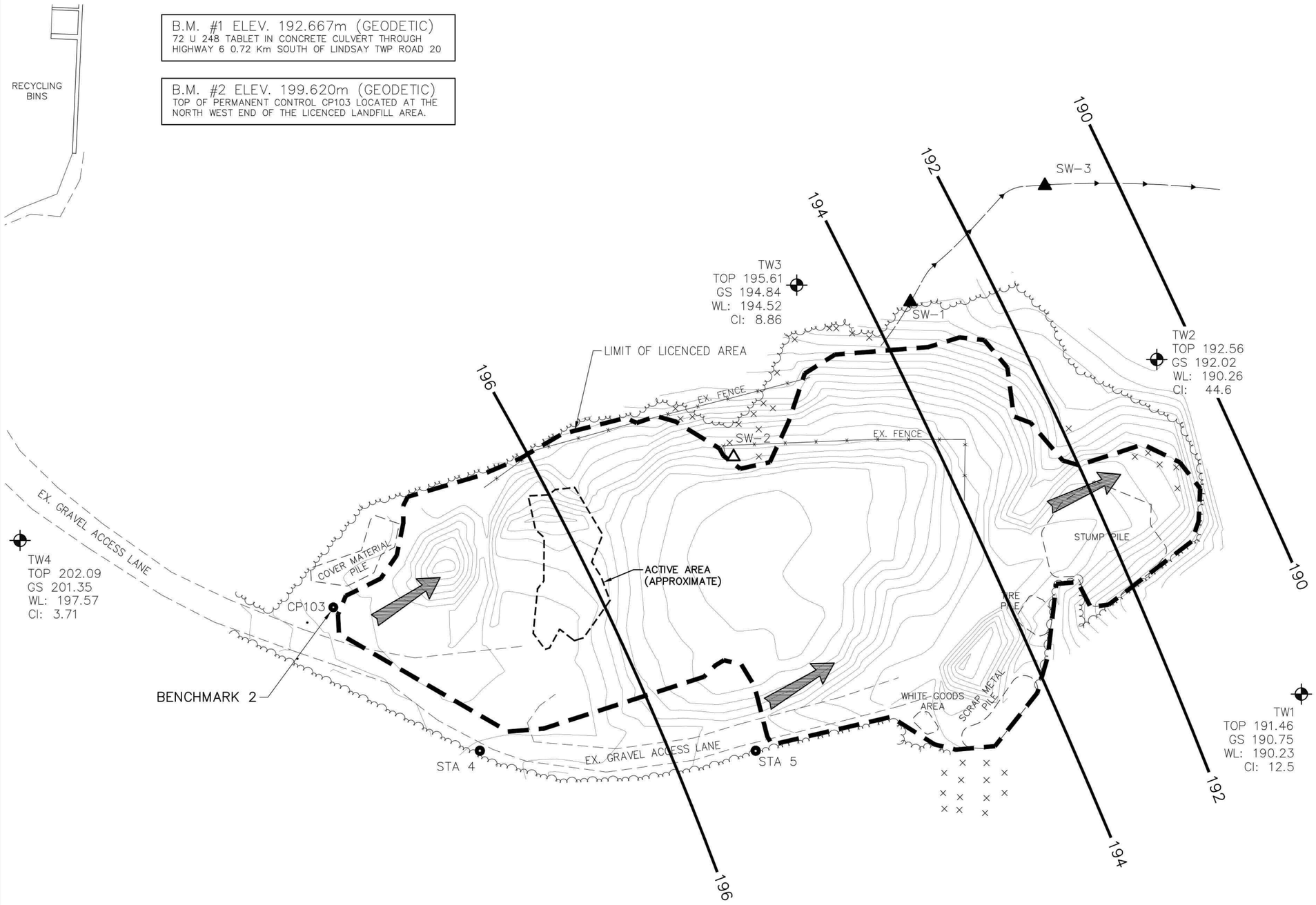
Figure No. 3

GEI Consultants Canada

B.M. #1 ELEV. 192.667m (GEODETIC)
72 U 248 TABLET IN CONCRETE CULVERT THROUGH HIGHWAY 6 0.72 Km SOUTH OF LINDSAY TWP ROAD 20

B.M. #2 ELEV. 199.620m (GEODETIC)
TOP OF PERMANENT CONTROL CP103 LOCATED AT THE NORTH WEST END OF THE LICENCED LANDFILL AREA.

2402868
Part Lots 18, 19 & 20, Conc. 3 W.B.R.
Municipality of Northern Bruce Peninsula



LEGEND

- FORMER PROPERTY LINE
- APPROXIMATE LIMIT OF EXISTING LANDFILL
- EXISTING DITCH, SWALE
- EXISTING TREELINE
- BEDROCK OUTCROPS
- SW-1 ACTIVE SURFACE WATER MONITORING STATION
- SW-2 FORMER SURFACE WATER MONITORING STATION
- TW4 MONITORING WELL
- WL: WATER LEVEL
- CP/STA SITE CONTROL
- TOP MEASURING POINT (TOP OF PVC)
- GS GROUND SURFACE
- Cl: CHLORIDE (mg/L)
- 193 INFERRED GROUNDWATER CONTOUR
- INFERRED GROUNDWATER FLOW DIRECTION

NOTES

1. THE INFORMATION SHOWN HERE WAS OBTAINED FROM A DRAWING BY HENDERSON PADDON AND ASSOCIATES LIMITED, DATED JUNE 2005. ACTIVE AREA LOCATION DERIVED FROM FIELD INVESTIGATION ON APRIL 16, 2025, BY GEI CONSULTING CANADA, LTD.
2. LOCATION OF PROPERTY LINES ARE APPROXIMATE ONLY.
3. CURRENT BRUSHPILE AND FILL SPECIFIC LOCATIONS ARE APPROXIMATE ONLY.
4. FIGURES WERE ADJUSTED IN 2022 TO SUIT UTM COORDINATES. THE ELEVATION ACROSS THE SITE WAS ADJUSTED TO REFLECT THE RESULTS OF THE SURVEY.

SCALE = 1:1000
APRIL 2025

GROUNDWATER FLOW MAP 2024

LINDSAY LANDFILL

Figure No. 4

GEI Consultants Canada

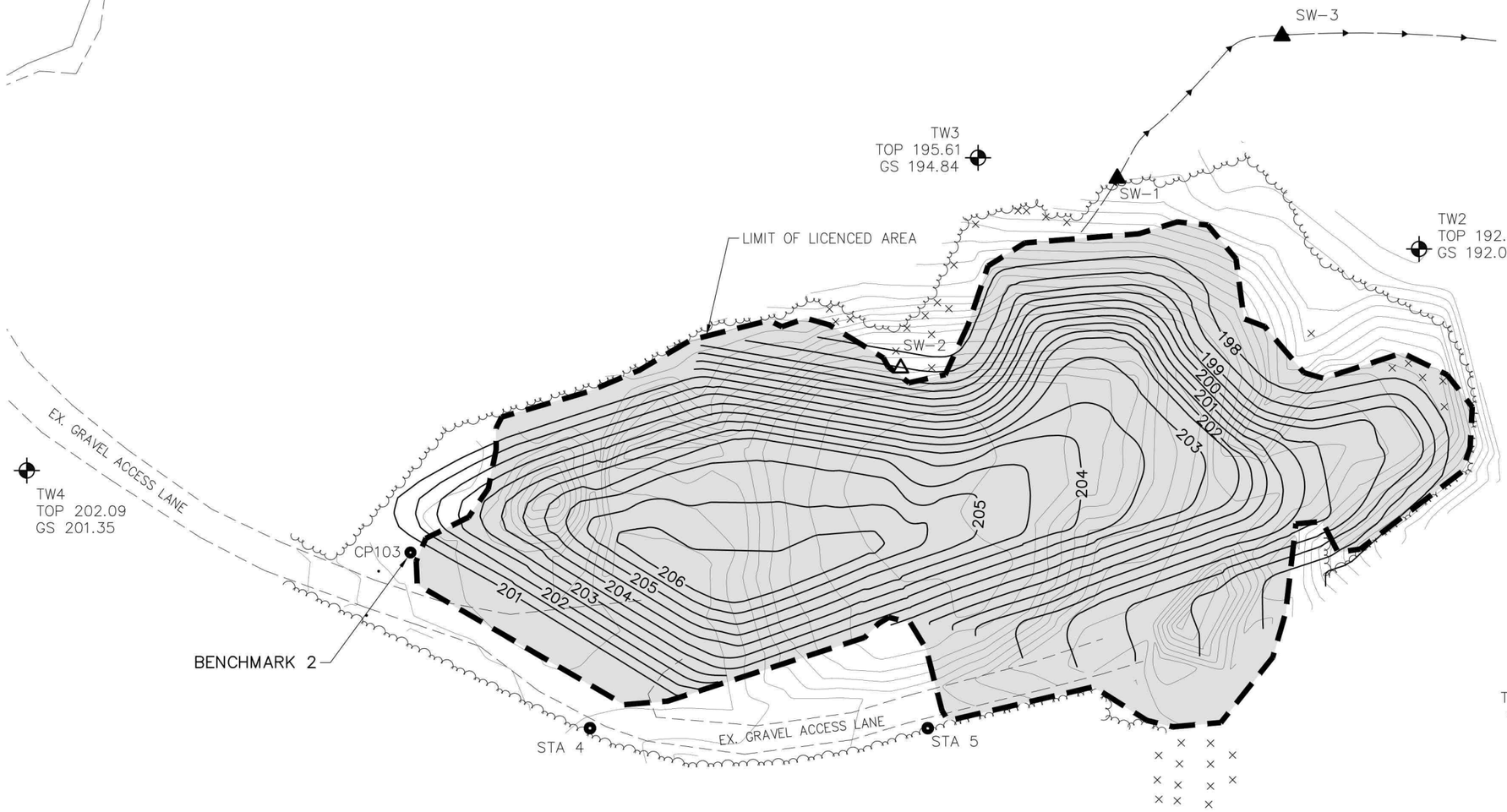
FILE:C:\AutoCAD Drawings\2402868 Lindsay AMR Figures.dwg LAYOUT:FIG 4-Groundwater Flow Map
LAST SAVED BY:Kenboe3954, 4/29/2025 2:10:28 PM PLOTTED BY:Boers, Ken 4/29/2025 2:11:43 PM

2402868
Part Lots 18, 19 & 20, Conc. 3 W.B.R.
Municipality of Northern Bruce Peninsula

RECYCLING BINS

B.M. #1 ELEV. 192.667m (GEODETIC)
72 U 248 TABLET IN CONCRETE CULVERT THROUGH HIGHWAY 6 0.72 Km SOUTH OF LINDSAY TWP ROAD 20

B.M. #2 ELEV. 199.620m (GEODETIC)
TOP OF PERMANENT CONTROL CP103 LOCATED AT THE NORTH WEST END OF THE LICENCED LANDFILL AREA.



LEGEND

- FORMER PROPERTY LINE
- APPROXIMATE LIMIT OF EXISTING LANDFILL
- EXISTING DITCH, SWALE
- EXISTING TREELINE
- × BEDROCK OUTCROPS
- ▲ SW–1 ACTIVE SURFACE WATER MONITORING STATION
- △ SW–2 FORMER SURFACE WATER MONITORING STATION
- ⊕ TW4 MONITORING WELL
- —199— PROPOSED FINAL CONTOUR
- ⊙ CP/STA SITE CONTROL
- TOP MEASURING POINT (TOP OF PVC)
- GS GROUND SURFACE

NOTES

1. THE INFORMATION SHOWN HERE WAS OBTAINED FROM A DRAWING BY HENDERSON PADDON AND ASSOCIATES LIMITED, DATED JUNE 2005. ACTIVE AREA LOCATION DERIVED FROM FIELD INVESTIGATION ON APRIL 16, 2025, BY GEI CONSULTING CANADA, LTD.
2. LOCATION OF PROPERTY LINES ARE APPROXIMATE ONLY.
3. CURRENT BRUSHPILE AND FILL SPECIFIC LOCATIONS ARE APPROXIMATE ONLY.
4. FIGURES WERE ADJUSTED IN 2022 TO SUIT UTM COORDINATES. THE ELEVATION ACROSS THE SITE WAS ADJUSTED TO REFLECT THE RESULTS OF THE SURVEY.

SCALE = 1:1000
APRIL 2025

FINAL CONTOUR PLAN

LINDSAY LANDFILL

Figure No. 5

GEI Consultants Canada

Appendix A Environmental Compliance Approval No. A272902

Ministry of the Environment
Ontario

Provisional Certificate No. A 272902

PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE

Under The Environmental Protection Act, 1971 and the regulations and subject to the limitations thereof, this Provisional Certificate of Approval is issued to:

Township of Lindsay
R.R. # 2
Lions Head, Ontario
N0H 1W0

for the use and operation of a 6.3 hectare dump site

all in accordance with the following plans and specifications:

Located: Parts of Lots 19 and 20, Concession 3, W.B.R.
Township of Lindsay
County of Bruce

which includes the use of the site only for the disposal of the following categories of waste (NOTE: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval) Domestic, commercial and 2% other, limited to brush and lumber.

and subject to the following conditions:

1. No operation shall be carried out at the site after sixty days from this condition becoming enforceable unless this Certificate including the reasons for this condition has been registered by the applicant as an instrument in the appropriate Land Registry Office against title to the site and a duplicate registered copy thereof has been returned by the applicant to the Director.

Dated this 11th day of June, 1980.

Director, Section 39,
The Environmental Protection Act, 1971

Ministry of the Environment

Ontario

NOTICE

TO: Township of Lindsay
R.R. # 2
Lions Head, Ontario
N0H 1W0

You are hereby notified that Provisional Certificate of Approval No. A 272902 has been issued to you subject to the conditions outlined therein.

The reasons for the imposition of these conditions are as follows:

The reason for the condition requiring registration of the Certificate is that Section 46 of The Environmental Protection Act, 1971 prohibits any use being made of the lands after they cease to be used for waste disposal purposes in order to protect future occupants of the site and the environment from any hazards which might occur as a result of waste being disposed of on the site. This prohibition and potential hazard should be drawn to the attention of future owners and occupants by the Certificate being registered on title.

You may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board.

This Notice should be served upon:

The Secretary,
Environmental Appeal Board,
1 St. Clair Ave. West,
5th Floor,
Toronto, Ontario.
M4V 1K7

AND

The Director,
Section 39
Ministry of the Environment,

DATED this 11th day of June , 1980 .

Director,
Section 39
Ministry of the Environment

RECEIVED JUN 1 3 2005

Ministry of the Environment / Ministère de l'Environnement

Ontario

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A272902
Notice No. 1

The Corporation of the Municipality of Northern Bruce Peninsula
Rural Route, No. 2
Lions Head, Ontario
N0H 1W0

Site Location: Lindsay Waste Disposal Site
Lot 19 & 20, Concession 3 W.B.R.
Northern Bruce Peninsula Municipality, County of Bruce

You are hereby notified that I have amended Provisional Certificate of Approval No. A272902 issued on June 11, 1980 for the use and operation of a waste disposal site, being known as the Lindsay Waste Disposal Site, as follows:

1. **Definitions**

The following definitions are added:

a) "CAZ" means the Contaminated Attenuation Zone;

b) "Certificate" means this Provisional Certificate of Approval including all Notices of Amendment;

c) "Director" means Director, Section 39, Environmental Protection act, R.S.O. 1990, C.E-19 as amended;

d) "District Manager" means the District Manager in the Owen Sound Area Office

e) "EPA" means the Environmental Protection Act, R.S.O. 1990, C.E-19 as amended;

f) "Ministry" means the Ontario Ministry of the Environment;

g) "Owner" means the Corporation of the Municipality of Northern Bruce Peninsula;

h) "OWRA" mean the Ontario Water Resource Act, R.S.O 1990, Chapter O.40

i) "Point of Compliance" means the boundary at which MOE Guideline B-7 shall be evaluated;
j) "Regulation 347" means Ontario Regulation 347 R.R.O. 1990; and

k) "Reasonable Use Guideline" means the Ministry Guideline B-7 entitled "Incorporation of the Reasonable Use Concept into MOE Groundwater Management Activities, dated April 1994, as amended

II. Design, Operations and Maintenance

2. By **July 30, 2005**, the owner shall submit to the Director for approval, with copies to the District Manager, a Design, Operation and Maintenance Plan pertaining to current operational procedures at the site. The plan shall include but not be limited to the following:

a) a plan(s) showing the site location, site plan, the current site conditions, the limits for the point of compliance and proposed limits of wastes;
b) a description of the waste disposal site design and related features such as the following:

i. waste disposal site containment and/or treatment features (Engineered or natural attenuation)
ii. Buffer Area;
iii. Sideslopes ;
vi. Leachate Collection System;
v Monitoring wells;
vi. Surface water drainage structures or features; and
vii. Utilities;

c) Waste inspection procedures;
d) The waste disposal site service area, the type of waste accepted, theoretical site capacity, the current volume of waste disposed at the site and the expected remaining life expectancy;
e) Leachate Management procedures and testing;
f) Site operation and maintenance procedures. These items shall include but not limited to the following:

i) Hours of Operation;
ii) Security/Access
iii) Signage;
iii) Burning of Materials;
iv) Daily/Interim Cover Material;
v) Recycling Operations;
vi) Equipment and Buildings;
vii) Litter Control
viii) Dust and noise Control
viii) Animal/Vector Control

g) Schedule for inspections at the Site, including outdoor storage facilities;
h) Description of the leachate management plan at the site and contingency plan addressing leachate outbreaks or migration off-site;
i) Description on the steps to be taken to address complaints at the site such as odours, dust, noise, vectors, vermin, rodents;

3. Any changes to the Site Design and Operation Manual shall be submitted to the District Manager for acceptance prior to their implementation.

4 By no later than **September 1, 2005**, the owner shall post a sign in a prominent location at the Site entrance clearly stating the Owner's name, Operator's name, Provisional Certificate of Approval Number, the hours of operation and municipal government contact telephone number to call with complaints or in the event of an emergency.

5. **Only clean wood and brush shall be permitted for burning or incineration. The burning at the waste disposal site must follow the Ministry of the Environment Guideline C-7 (Burning at Landfill Sites - April 1994). The operator must be in attendance during the operation and ensure the fire is fully extinguished before leaving the site.**

Clean wood chips may be used as weekly cover material (150 mm thickness)

The owner shall undertake litter pick-up around the property in the early spring and late fall, including the fenceline and any surface water bodies on the property. The owner shall also undertake regularly scheduled litter pick-ups around the site between the months of May and September. The owner shall submit a schedule to the District Manager no later than April 1 of each year indicating the proposed litter pick-up schedule for that year.

By December 31, 2005, the owner shall submit to the Director for approval, with copies to the District Manager, a Vector and Vermin Control/Management Plan.

By **September 1, 2005**, the owner shall clearly define the boundaries of the limit of waste by installing permanent markers that can be visible year-round.

II. Annual Report

10. By **June 30, 2005**, and by every June 30 thereafter, the proponent shall submit, to the MOE District Manager (Owen Sound Area Office) an annual report. The report shall be prepared by an qualified professional engineer, hydrogeologist and surface water specialist. The report shall contain, but is not limited to, the following information:

a) a summary of type and quantity of incoming waste accepted during the reporting period;
b) a summary of total amount of waste received at the site, remaining capacity and remaining life expectancy of the site;
c) a summary of the site's operation procedure and compliance as per the Design and Operation Plan;
d) a summary of recycling operations;

e) a section of text describing the site's hydrogeologic setting;
f) a location map illustrating the site relative to nearby existing groundwater and surface water features, based on known information;
g) a site plan(s) illustrating the approved waste disposal site footprint and currently filled area;
h) a water table contour map;
i) if any changes from the previous report, a stratigraphic cross-sections which clearly illustrate the subsurface distribution of geological materials. Otherwise, the owner shall reference the report where the drawing may be located;
j) the report shall document sampling protocols, and describe any problems encountered during the sampling runs which may have impacted the reliability of analytical results;
k) All analytical results for all parameters must be presented in tabular form. All analytical results for the critical contaminants must be presented graphically on time-series graphs, and must be compared to the trigger levels in accordance with the environmental contingency plan that was established in the reasonable use assessment.
l) the report shall identify the "Reasonable Use" (Guideline B-7) of the ground water that is to be impacted. The report should also identify expected and worst-case impacts;
m) the report shall include a comparison of the results of surface water sampling to the PWQOs or Interim PWQOs described in Water Management, MOEE, July 1994, as amended from time to time;
n) discussion of the Site's Contaminant Attenuation Zone (CAZ);
o) QA/QC protocol shall be described; and
p) the report shall include conclusions and recommendations of the author(s), especially as they concern future sampling parameters, frequency and protocol.

IV. Record Keeping

11. For days when site operations occur, the Owner shall establish and maintain a written record of daily operations at the Site. This record must be in a form of a log or a dedicated electronic file and it shall include as a minimum the following information:

a) date of record;
b) hours of operation;
c) an approximation of the type, amount and source of waste received;
d) an estimate on the amount of recyclable materials (depending on item - i.e. number of containers, number or number of tires, appliances, batteries) removed from the site by the licensed hauler retained by the owner;

12. The Owner shall establish and maintain a written record of all environmental emergency situations at the Site. This record shall be in the form of a log or a dedicated electronic file and it shall include, as a minimum, the following information:

a) type of the emergency situation and the resulting environmental impact;
b) actions taken to address the impact; and
c) actions taken to prevent the re-occurrence of a similar emergency situation in the future.

The Owner shall establish and maintain a written record of complaints received about the site. The records shall be kept at the municipal office. This record shall be in the form of a log or a dedicated electronic file and it shall include, as a minimum, the following information:

a) date and time of any complaints received at the Site and their nature;
b) name, address and telephone number of the complainant;
c) nature of the complaint;
d) date and description of any remedial actions taken to address the received complaints; and
e) actions taken to prevent the re-occurrence of a similar incident, in the future.

14. The Owner shall establish and maintain a written record of the site inspections. This record shall be in the form of a log or a dedicated electronic file and it shall include, as a minimum, the following information:

a) date and time of inspection;
b) name, title and signature of personnel conducting the inspection; and
c) a listing of all equipment, fencing, signs, etc. inspected and any deficiencies observed; and
d) recommendations for remedial action and the completion date of such action.

The Owner shall establish and maintain a written record of all occurrences of unapproved waste landfilled at the Site. This record shall be in a form of a log or a dedicated electronic file and it shall include, as a minimum, the following information:

a) waste generator (if known);
b) type of unapproved waste;
c) an approximation on the amount of unapproved waste;
d) nature of unapproved waste;
e) steps taken to remove waste material; and
f) actions taken by the Owner to prevent recurrence.

16. The Owner shall retain at the Municipal Office for a minimum of two (2) years from the date of their creation, or longer if requested in writing by the District Manager, all records and information relating to or resulting from the activities approved under this Certificate, and shall make all records and information available at all times for inspection by a Provincial Officer.

V. Contingency Plans and Trigger Mechanisms

17. By June 1, 2006, the Owner shall submit to the Director, for approval, and copies to the District Manager, details of a trigger mechanisms plan for surface water and groundwater quality monitoring for the purpose of initiating investigative activities into the cause of increased contaminant concentrations at the site's point of compliance.

18. By June 1, 2006, the Owner shall submit to the Director for approval, and copies to the District

Manager, details of a contingency plan to be implemented in the event that the surface water or groundwater quality exceeds the trigger mechanism at the site's point of compliance.

19. In the event of a confirmed exceedance of a site-specific trigger level relating to leachate mounding or groundwater or surface water impacts due to leachate at the site's point of compliance, the Owner shall immediately notify the District Manager, and an investigation into the cause and the need for implementation of remedial or contingency actions shall be carried out by the Owner in accordance with the approved trigger mechanisms and associated contingency plans.

20. If monitoring results, investigative activities and/or trigger mechanisms indicate the need to implement contingency measures, the Owner shall ensure that the following steps are taken:

a.) The Owner shall notify the District Manager, in writing of the need to implement contingency measures, no later than 30 days after confirmation of the exceedances;

b.) Detailed plans, specifications and descriptions for the design, operation and maintenance of the contingency measures shall be prepared and submitted by the Owner to the District Manager for approval; and

c.) The contingency measures shall be implemented by the Owner upon approval by the District Manager.

21. The Owner shall ensure that any proposed changes to the site-specific trigger levels for leachate impacts to the surface water or groundwater, shall be approved in advance by the Director via an amendment to this Certificate.

The reason(s) for this amendment to the Certificate of Approval is (are) as follows:

1. *Condition 2 is added to ensure the owner has a Design, Operation and Maintenance plan for the landfill reflects the current operations of the site. The condition is also to ensure the landfill is operated in accordance with Ministry standards, and to ensure the long-term protection of the health and safety of the public and the environment.*

2 *Conditions 3 through 9 are added to ensure the landfill is operated in accordance with Ministry standards, and to ensure the long-term protection of the health and safety of the public and the environment.*

3. *Condition 10 through 16 are added to ensure the monitoring and reporting are completed in accordance with Ministry standards, and to ensure the long-term protection of the health and safety of the public and the environment.*

4. *Condition 17 through 21 are added to ensure the owner has a plan with an organized set of procedures for identifying and responding to potential issues relating to groundwater and surface water contamination near or at the site's compliance point.*

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A272902 dated June 11, 1980

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as nded, you may by written notice served upon me and the Environmental Review Tribunal within 15 days ter receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the waste disposal site is located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., 12th Floor
P O Box 2382
ito, Ontario
1E4

AND

The Director
Section 39, *Environmental Protection Act*
Ministry of Environment and Energy
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

* **Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted waste disposal site is approved under Section 39 of the Environmental Protection Act.

DATED AT TORONTO this 1st day of June, 2005

Ian Parrott, P.Eng.
Director
Section 39, *Environmental Protection Act*

DG/
c: District Manager, MOE Owen Sound
Kathryn Smyth, Clerk

Ministry of the Environment | Ministère de l'Environnement

Ontario

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A272902
Notice No. 2

RECEIVED AUG 1 1 2005

The Corporation of the Municipality of Northern Bruce Peninsula
56 Lindsay Road 5, RR 2
Lion's Head, Ontario
N0H 1W0

Site Location: Lindsay Landfill
Lot 19 & 20, Concession 3 W.B.R.
Northern Bruce Peninsula Municipality, County of Bruce

You are hereby notified that I have amended Provisional Certificate of Approval No. A272902 issued on June 11, 1980 and amended on June 1, 2005 for the use and operation of a waste disposal site, being known as the Lindsay Waste Disposal Site, as follows:

The following Condition is hereby amended as follows:

2. By **January 30, 2006**, the owner shall submit to the Director for approval, with copies to the District Manager, a Design, Operation and Maintenance Plan pertaining to current operational procedures at the site. The plan shall include but not be limited to the following:

a) a plan(s) showing the site location, site plan, the current site conditions, the limits for the point of compliance and proposed limits of wastes;

b) a description of the waste disposal site design and related features such as the following:

i. waste disposal site containment and/or treatment features (Engineered or natural attenuation)
ii. Buffer Area;
iii. Sideslopes ;
vi. Leachate Collection System;
v Monitoring wells;
vi. Surface water drainage structures or features; and
vii. Utilities;

c) Waste inspection procedures;

d) The waste disposal site service area, the type of waste accepted, theoretical site capacity, the current volume of waste disposed at the site and the expected remaining life expectancy;
e) Leachate Management procedures and testing;
f) Site operation and maintenance procedures. These items shall include but not limited to the following:

i) Hours of Operation;
ii) Security/Access
iii) Signage;
iii) Burning of Materials;
iv) Daily/Interim Cover Material;
v) Recycling Operations;
vi) Equipment and Buildings;
vii) Litter Control
viii) Dust and noise Control
viii) Animal/Vector Control

g) Schedule for inspections at the Site, including outdoor storage facilities;
h) Description of the leachate management plan at the site and contingency plan addressing leachate outbreaks or migration off-site;
i) Description on the steps to be taken to address complaints at the site such as odours, dust, noise, vectors, vermin, rodents;

The reason(s) for this amendment to the Certificate of Approval is (are) as follows:

1. *Condition (2) is amended to grant the request by the Municipalility for an extension to the submission date for the the Design and Operations Plan*

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A272902 dated June 11, 1980

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;

The municipality within which the waste disposal site is located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., 12th Floor
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Director
Section 39, *Environmental Protection Act*
Ministry of Environment and Energy
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted waste disposal site is approved under Section 39 of the Environmental Protection Act

DATED AT TORONTO this 2nd day of August, 2005

Ian Parrott, P.Eng.
Director
Section 39, *Environmental Protection Act*

DG/

c: District Manager, MOE Owen Sound
Rob Deverell, The Corporation of the Municipality of Northern Bruce Peninsula

File 135703

Ontario

Ministry of the Environment | Ministère de l'Environnement

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A272902
Notice No. 3
Issue Date: May 16, 2006

The Corporation of the Municipality of Northern Bruce Peninsula
56 Lindsay Road 5, RR 2
Lions Head, Ontario
N0H 1W0

Site Location: Lindsay Landfill
Lot 19 and 20, Concession 3 West of Bury Road, Lindsay
Northern Bruce Peninsula Municipality, County of Bruce

You are hereby notified that I have amended Provisional Certificate of Approval No. A272902 issued on June 11, 1980 and amended on June 1, 2005 and August 2, 2005 for the use and operation of a waste disposal site, being known as the Lindsay Waste Disposal Site having a maximum capacity of 690,000 cubic meters, as follows:

The following Conditions are hereby added to the Certificate:

22. Except as otherwise provided by the Conditions in the Certificate, the Site shall be operated as per Items 1 through 4 in Schedule A and any supporting documentation, plans and specifications submitted therewith.

23. i. Where there is a conflict between a provision of any document, including the application, referred to in this *Certificate*, and the conditions of this *Certificate*, the conditions in this *Certificate* shall take precedence.

ii. Where there is a conflict between the application and a provision in any documents listed in Schedule "A", the application shall take precedence, unless it is clear that the purpose of the document was to amend the application and that the *Ministry* approved the amendment.

iii. Where there is a conflict between any two documents listed in Schedule "A", other than the application, the document bearing the most recent date shall take precedence.

iv. The conditions of this *Certificate* are severable. If any condition of this *Certificate*, or the application of any condition of this *Certificate* to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this *Certificate* shall not be affected thereby.

24. i. The approved theoretical volumetric capacity of the Site is calculated to be **690,000** cubic metres;

ii. The total waste capacity excluding final cover for the area approved under the Design & Operations Report identified in Item 1 of Schedule "A" is **57,900** cubic meters.

iii. Development and use of the remaining Site capacity shall not commence without first obtaining an approval issued by the Director for a design and operating plan for each area to be developed, and all works shall be carried out in accordance with the Director's approval.

25. Soil cover material at least 150 mm in thickness shall be placed over the working face of the landfill at least once a month.

Certificate of Registration

26. The Owner shall for the any future lands that are purchased to be part of the landfill site shall complete the following:

(1) Pursuant to Section 197 of the *EPA*, no person having an interest in the *Site* shall deal in any way with the *Site* without first giving a copy of this *Certificate* to each person acquiring an interest in the *Site* as a result of the dealing.

(2) Two copies of a completed Certificate of Prohibition, containing a registerable description of the *Site*, shall be submitted to the Director for the Director's signature within 60 calendar days of acquiring the land.

(3) The Certificate of Prohibition shall be registered in the appropriate land registry office on title to the *Site* by the *Owner* within 10 calendar days of receiving the Certificate of Prohibition signed by the *Director,* and a duplicate registered copy shall be submitted to the *Director*.

The following Items are hereby added to Schedule "A":

1. Report entitled "Development & Operations Report - Former Township of Lindsay Waste Disposal Site' prepared for the Municipality of Northern Bruce by Henderson Paddon & Associates Ltd dated April 2006.

2. Letter dated February 15, 2006 addressed to Mr. Rob Deverell, Municipality of Northern Bruce Peninsula from Mr. Dale Gable, Ministry of the Environment requesting clarification on theoretical capacity, daily cover and sideslopes.

3. Letter dated February 23, 2006 addressed to Mr. Dale Gable, Ministry of the Environment from Mr. Rob Deverell, Municipality of Northern Bruce Peninsula providing a response to the February 15, 2006 letter.

4. Letter dated May 4, 2005 addressed to Mr. Rob Deverell, Municipality of Northern Bruce Peninsula from Mr. Dale Gable, Ministry of the Environment providing additional review comments on the Design and Operations Plan

The reason(s) for this amendment to the Certificate of Approval is (are) as follows:

1. *The reasons for Condition (22) is to incorporate the submitted plan and supporting documentation regarding the Development and Operation on the Site into the Certificate. This is to ensure the long-term health and safety of the public and the environment.*

2. *The reasons for Condition (23) is to ensure the Owner is aware of their roles and responsibilities. This is to ensure the long-term health and safety of the public and the environment.*

3. *The reason for Condition (24) is to clearly identify the Site's capacity as identified in the Development and Operations Plan.*

4. *The reason for Condition (25) is to ensure cover material is placed over the working face as indicated in the Development and Operations Plan.*

5. *The reason for Condition (26) is included, pursuant to subsection 197(1) of the EPA, to provide that any persons having an interest in the Site are aware that the land has been approved and used for the purposes of waste disposal.*

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A272902 dated June 11, 1980

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the waste disposal site is located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., 12th Floor
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Director
Section 39, *Environmental Protection Act*
Ministry of Environment and Energy
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted waste disposal site is approved under Section 39 of the Environmental Protection Act.

DATED AT TORONTO this 16th day of May, 2006

THIS NOTICE WAS MAILED
ON May 19, 2006
9C
(Signed)

Tesfaye Gebrezghi, P.Eng.
Director
Section 39, *Environmental Protection Act*

DG/
c: District Manager, MOE Owen Sound
Peter Brodzikowski, P.Eng., Henderson Paddon & Associates Limited ✓

Ontario

Ministry of the Environment | Ministère de l'Environnement

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A272902
Notice No. 4
Issue Date: January 29, 2007

The Corporation of the Municipality of Northern Bruce Peninsula
56 Lindsay Road 5
Rural Route, No. 2
Lions Head, Ontario
N0H 1W0

Site Location: Lindsay Landfill
Lot 19 and 20, Concession 3 West of Bury Road, Lindsay
Northern Bruce Peninsula Municipality, County of Bruce

You are hereby notified that I have amended Provisional Certificate of Approval No. A272902 issued on June 11, 1980 and amended on June 1, 2005, August 2, 2005 and May 16, 2006 for the use and operation of a waste disposal site, being known as the Lindsay Waste Disposal Site having a maximum capacity of 690,000 cubic meters , as follows:

The following Conditions are hereby added to the Certificate:

27. The Trigger Mechanism Plan shall be undertaken by the *Owner* in accordance with Items 5 set out in Schedule "A".

28. By no later than **December 31, 2007**, the *Owner* shall submit to the *District Manager* , with copies to the *Director* , a letter report providing a status on whether additional lands have been acquired for contaminant attenuation zone purposes (as indicated in Item 6 - Schedule "A") and provide a discussion on whether the site is in compliance with the Reasonable Use Guideline and/or having an adverse impacts off-site.

The following Items are hereby added to Schedule "A":

5. Letter report dated May 29, 2006 addressed to Mr. Ian Mitchell, Ministry of the Environment from M.D. Nelson, Gamsby and Mannerow Ltd. The letter report was entitled "T*rigger Mechanism and Contingency Plan - Lindsay Waste Disposal Site Provisional CofA 272902* ".

6. Letter dated November 30, 2006 addressed to Mr. Ian Mitchell, Ministry of the Environment from Mr. Rob Deverell, Municipality of Northern Bruce Peninsula providing comment on annual reports, remedial works completed to-date and discussions with the County to obtain additional lands for CAZ.

The reasons for this amendment to the Certificate of Approval are as follows:

1. *The reasons for Condition No. (27) is to approve and incorporate the submission to satisfy the requirement for a trigger mechanism and contingency plan. This is to ensure the long-term health and safety of the public and the environment.*

2. *The reason for Condition No. (28) is to ensure the Owner updates the ministry on the status of acquiring lands for CAZ and whether the site is in compliance with regards to RUC and/or having an adverse impact to the adjacent lands.*

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A272902 dated June 11, 1980, as amended.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the waste disposal site is located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., Suite 1700
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Director
Section 39, *Environmental Protection Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted waste disposal site is approved under Section 39 of the Environmental Protection Act.

DATED AT TORONTO this 29th day of January, 2007

THIS NOTICE WAS MAILED
ON Jan. 30, 2007
dc
(Signed)

Tesfaye Gebrezghi, P.Eng.
Director
Section 39, *Environmental Protection Act*

DG/

c: District Manager, MOE Owen Sound
M. D. Nelson, Gamsby and Mannerow Limited ✓

Appendix B Correspondence

LINDSAY WASTE DISPOSAL SITE LITTER PICK-UP SCHEDULE

A site litter pick-up will be conducted at least once per month. The area of litter pick-up will include at least the following areas: active area, recycling/segregation areas, access road, tree/brush lines, fencing lines. All litter will be collected and immediately landfilled into the active area. In addition to these regularly scheduled monthly pick-ups, enough daily litter pick-ups should be conducted to keep the acceptable appearance of the site. In the early spring (first week in May) and late fall (last week in September), a major litter pick-up will take place.

Month	Date	Name	Area of Litter Pick-up	Comments
January				
February				
March				
April				
May (**Major)**				
June				
July				
August				
September (**Major**)				
October				
November				
December				

Ministry of the Environment,
Conservation & Parks
Owen Sound District Office

101 17th Street East, 3rd Floor
Owen Sound ON N4K 0A5
Tel.: 519-371-2901
Fax.: 519-371-2905

Ministère de l'Environnement, de la Protection de la nature et des Parcs
Bureau de district d'Owen Sound

101 17ème rue Est, 3e étage
Owen Sound ON N4K 0A5
Tél. : 519-371-2901
Téléc. : 519-371-2905

Ontario

July 24, 2019

Mr. Troy Cameron
Municipality of Northern Bruce Peninsula
R.R. # 2
56 Lindsay Rd. 5
Lion's Head, ON N0H 1W0

Dear Mr. Cameron

Re: Lindsay Landfill Site, 2018 Annual Report
MOE File: SI BR NB C3 610

Further to my letter to you dated June 11, 2019, containing groundwater comments for the 2018 Annual Monitoring Report for the Lindsay Landfill, our regional surface water specialist has reviewed the 2018 annual report and provides the following comments:

Two surface water monitoring locations (SW1 and SW3) on the same creek are to be sampled twice per year under approval # A272902. In 2018 dry conditions were encountered during the site visits and samples were collected only at SW3 in the fall. These results were typical of those seen in previous years however the lack of seasonal data at both locations does not allow any conclusions to be reached about current conditions for leachate attenuation. If a lack of flow in the intermittent creek is encountered again next year, the municipality should ensure that the landfill site is re-visited after a period of wet weather when flowing water conditions are more likely. This would show due diligence in trying to meet the sampling requirement.

If you have any questions concerning this letter, please contact me at (519) 374-1388.

Yours truly,

Ian Mitchell
District Engineer
Owen Sound District

cc. H. Pfeiffer, MECP Owen Sound
Scott Abernethy, MECP, London
M.D. Nelson, GM BluePlan, Owen Sound

Appendix C Borehole Logs

TW1

BOREHOLE LOG

Project: Former Lindsay Township Landfill
Client: Mun. of Northern Bruce Peninsula
Method: HSA, HQ
Elev: 192.50 m TOC: 193.23 m
Dia: 180, 114 mm
Depth: 6.71 m
Geologist: E Fraser
Project#: 195703
Date: 12 Sep 00
Driller: Lantech

Depth METERS	Stratigraphic Description	Strata Plot	Samples: Sampler	Sample No.	Type	N or RQD	S/U= 0.73	Well Instrumentation
	Dark Brown TOPSOIL 192.4			1	SS			Concrete
1	Light to medium brown Silty fine to medium grained SAND and GRAVEL. Gravel fragments are sedimentary and igneous. Some orange mottling.							0.6 Bentonite Seal (Holeplug) Riser pipe 50 mm, PVC Flushthreaded Triloc
	190.9			2	SS			Static Water Level at 1.55 m, on September 25, 2000
	Light brown, Sandy SILT, some gravel. Saturated. 190.7							
2	Grey Silty fine to medium SAND and GRAVEL, saturated.							
	190.2							
	Angular gravel of various types, (some granitic). 190.1			CS1	RC			2.8 Sandpack # 3 size
	Grey brown to dark grey DOLOSTONE							
3	Finely crystalline, quartz vugs, numerous pinhole vugs. Weaknesses within the rock have induced fresh "machine breaks".							
	@ 3.43 m H.F., weathered surfaces with mud, fragmentation. Lost circulation of drilling water.							3.7 Screen, 50 mm, 10 slot, PVC Flush threaded Triloc
4				CS2	RC			
5								
				CS3	RC			
6	@ 5.79 m H.F., weathered surfaces with orange and rust coloured staining.							
	Quantity, density and size of vugs are increasing. 185.8							6.7
	E.O.H. at 6.71 m							
7								
	HF = Horizontal Fracture VF = Vertical Fracture AF = Angled Fracture SS = Split Spoon RC = Rock Core							
8								
9								

TW2

BOREHOLE LOG

Project: **Former Lindsay Township Landfill** Project#: **195703**

Client: **Mun. of Northern Bruce Peninsula** Dia: **180, 114 mm** Date: **13 Sep 00**

Method: **HSA, HQ** Depth: **6.48 m** Driller: **Lantech**

Elev: **194.25 m** TOC: **194.83 m** Geologist: **E Fraser**

METERS Depth	Stratigraphic Description	Strata Plot	Samples: Sampler	Sample No.	Type	N or RQD	S/U= 0.58	Well Instrumentation
	Dark brown humic rich topsoil. 194.1							Concrete
	Grey brown to dark grey DOLOSTONE Finely crystalline, quartz vugs, numerous pinhole vugs. Weaknesses within the rock have induced fresh "machine breaks".			CS1	RC			0.6 Bentonite Seal (Holeplug) Riser pipe 50 mm, PVC Flushthreaded Triloc
1	Fracture zone (VF & HF) between 0.30 and 0.81 m. Weathered surfaces with mud. Lost circulation of drilling water.							
2				CS2	RC			2.6 Sandpack # 3 size Static Water Level at 2.73 m, on September 25, 2000
3	@ 2.90 m H.F., weathered surfaces with brown staining. Vug with weathered crystals visible. @ 3.07 m H.F., weathered surfaces with mud.							3.4 Screen, 50 mm, 10 slot, PVC Flush threaded Triloc
4	@ 3.68 m H.F., weathered surfaces with mud. Fracture is intersected by a vertical hairline fracture.			CS3	RC			
5				CS4	RC			
6	@ 5.40 m H.F., weathered surfaces with a whiteish grey mineral deposit. Fractured zone between 5.77m and 5.89 m., weathered surfaces with mud. Some vertical hairline fractures intersecting zone, white mineral deposit on edges and surfaces. Fractured zone between 5.96 m and 6.20 m., weathered surfaces with mud, and some rust coloured staining. 187.8							6.5
7	E.O.H. at 6.48 m.							
8	HF = Horizontal Fracture VF = Vertical Fracture AF = Angled Fracture SS = Split Spoon RC = Rock Core							
9								

TW3

BOREHOLE LOG

Project: **Former Lindsay Township Landfill** Project#: **195703**

Client: **Mun. of Northern Bruce Peninsula** Dia: **180, 114 mm** Date: **12 Sep 00**

Method: **HSA, HQ** Depth: **6.58 m** Driller: **Lantech**

Elev: **195.00 m** TOC: **195.67 m** Geologist: **E Fraser**

METERS Depth	Stratigraphic Description		Strata Plot	Samples: Sampler	Sample No.	Type	N or RQD	S/U= 0.67	Well Instrumentation
	Dark brown loamy topsoil	194.9			1	SS			Concrete
1	*Medium brown, layered silty very fine SAND and medium SAND with silt. Soft, moist.*							0.6	Bentonite Seal (Holeplug) Riser pipe 50 mm, PVC Flushthreaded Triloc
	Gravel fragments of igneous rock, various compositions.	193.6							
	Light greyish brown to dark grey DOLOSTONE. Finely crystalline, quartz vugs, numerous pinhole vugs. Weaknesses within the rock have induced fresh "machine breaks".	193.6			CS1	RC			Static Water Level at 1.46 m, on September 25, 2000
2	*Fractured zone between 1.73 m and 1.79 m. Some weathering on surfaces. Lost circulation of drilling water.*				CS2	RC			
	@ 1.94 medium grey colour with brown mottling, dark grey veining.							2.5	Sandpack # 3 size
3									
	@ 3.61 m light greyish brown colour, with occasional dark grey lense.							3.5	
	@ 3.73 m V.F., intersecting an angled machine break, (weakened area), no weathering.				CS3	RC			Screen, 50 mm, 10 slot, PVC Flush threaded Triloc
4									
5					CS4	RC			
6	*Between 5.92 m and 5.97 m., Increased density and size of the pinhole vugs brown staining.*	189.0							
	Between 6.30 m and 6.40 m., Increased density and size of the pinhole vugs, brown staining.	188.6							
	E.O.H. at 6.58 m.	188.4						6.6	
7									
	HF = Horizontal Fracture *VF = Vertical Fracture* *AF = Angled Fracture* *SS = Split Spoon* *RC = Rock Core*								
8									
9									

TW4

BOREHOLE LOG

Project: Former Lindsay Township Landfill
Client: Mun. of Northern Bruce Peninsula
Method: HSA, HQ
Elev: 200.00 m TOC: 200.73 m
Dia: 180, 114 mm
Depth: 7.90 m
Geologist: E Fraser
Project#: 195703
Date: 11 Sep 00
Driller: Lantech

Depth METERS	Stratigraphic Description	Strata Plot	Samples: Sampler	Sample No.	Type	N or RQD	S/U= 0.73	Well Instrumentation
0	*Dark brown loam, with gravel.*		SS	1	SS			0.3 Concrete; Bentonite Seal (Holeplug); Riser pipe 50 mm, PVC Flushthreaded Triloc
1	198.8 / 198.7 *Gravel fragments of igneous rock, various compositions.* *Grey brown to dark grey DOLOSTONE. Finely crystalline, quartz vugs, numerous pinhole vugs. Weaknesses within the rock have induced fresh "machine breaks".* *Fractured zone between 1.35 m and 4.06 m. Weathered surfaces with mud, rust coloured staining, and crystals.*		CS	1	RC			
2			CS	2	RC			2.5 Sandpack # 3 size
3			CS	3	RC			3.3 Screen, 50 mm, 10 slot, PVC Flush threaded Triloc
4								Static Water Level at 4.45 m, on September 25, 2000
5	*Fractured zone between 5.09 m and 5.16 m. Weathered surfaces with rust coloured staining.*		CS	4	RC			
6	*@ 6.25 m H.F., weathered surfaces with some mud, adjacent vuggieness.*							
7			CS	5	RC			
8	192.1 *E.O.H. at 7.90 m.*							7.9
9	*HF = Horizontal Fracture* *VF = Vertical Fracture* *AF = Angled Fracture* *SS = Split Spoon* *RC = Rock Core*							

Appendix D Laboratory Analytical Reports

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: **GM BLUEPLAN**
1260 Second Avenue East, Unit 1
OWEN SOUND, ON N4K2J3
(519) 376-1805

ATTENTION TO: **Jessica Weller**

PROJECT: **M1554**

AGAT WORK ORDER: **24T144880**

WATER ANALYSIS REVIEWED BY: **Yris Verastegui, Inorganic Team Lead**

DATE REPORTED: **May 13, 2024**

PAGES (INCLUDING COVER): **10**

VERSION*: **1**

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

Notes

AGAT Laboratories

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FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 24T144880

PROJECT: M1554

CLIENT NAME: GM BLUEPLAN

ATTENTION TO: Jessica Weller

SAMPLING SITE:

SAMPLED BY:

Lindsay Surface Water Package

DATE RECEIVED: 2024-05-01

DATE REPORTED: 2024-05-13

		SAMPLE DESCRIPTION:		SW-1	SW-3
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2024-04-30	2024-04-30
Parameter	Unit	G / S	RDL	5830353	5830361
Electrical Conductivity	µS/cm		2	828	829
pH	pH Units	6.5-8.5	NA	8.08	8.21
Alkalinity (as CaCO3)	mg/L		5	396	400
Hardness (as CaCO3) (Calculated)	mg/L		0.5	219	234
Chloride	mg/L		0.12	27.6	28.8
Nitrate as N	mg/L		0.05	0.72	0.64
Nitrite as N	mg/L		0.05	<0.05	<0.05
Sulphate	mg/L		0.10	41.3	40.9
Ammonia as N	mg/L		0.02	0.34	0.02
Total Kjeldahl Nitrogen	mg/L		0.10	0.76	1.04
Total Phosphorus	mg/L	*	0.02	0.04	0.05
Dissolved Organic Carbon	mg/L		0.5	11.4	11.8
Phenols	mg/L	0.001	0.001	<0.001	<0.001
Sulphide	mg/L		0.01	<0.01	<0.01
Total Potassium	mg/L		0.50	4.80	3.81
Total Sodium	mg/L		0.10	23.4	18.8
Total Antimony	mg/L	0.020	0.003	<0.003	<0.003
Total Arsenic	mg/L	0.1	0.003	<0.003	<0.003
Total Barium	mg/L		0.002	0.033	0.034
Total Beryllium	mg/L	*	0.001	<0.001	<0.001
Total Boron	mg/L	0.2	0.010	**0.689**	**0.628**
Total Cadmium	mg/L	0.0002	0.0001	<0.0001	0.0001
Total Chromium	mg/L		0.003	<0.003	0.003
Total Cobalt	mg/L	0.0009	0.0005	<0.0005	<0.0005
Total Copper	mg/L	0.005	0.002	<0.002	0.003
Total Iron	mg/L	0.3	0.050	**0.887**	**1.72**
Total Lead	mg/L	*	0.0005	<0.0005	0.0022
Total Molybdenum	mg/L	0.040	0.002	0.002	0.005
Total Nickel	mg/L	0.025	0.003	<0.003	0.005
Total Selenium	mg/L	0.1	0.002	<0.002	<0.002

Certified By: Iris Verástegui

AGAT Laboratories

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http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 24T144880

PROJECT: M1554

CLIENT NAME: GM BLUEPLAN

ATTENTION TO: Jessica Weller

SAMPLING SITE:

SAMPLED BY:

Lindsay Surface Water Package

DATE RECEIVED: 2024-05-01

DATE REPORTED: 2024-05-13

		SAMPLE DESCRIPTION:		SW-1	SW-3
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2024-04-30	2024-04-30
Parameter	Unit	G / S	RDL	5830353	5830361
Total Silver	mg/L	0.0001	0.0001	<0.0001	<0.0001
Total Thallium	mg/L	0.0003	0.0003	<0.0003	<0.0003
Total Vanadium	mg/L	0.006	0.002	<0.002	0.003
Total Zinc	mg/L	0.030	0.020	<0.020	<0.020
Lab Filtration DOC				2024/05/02	2024/05/02

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to PWQO * Variable - refer to guideline reference document
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5830353-5830361 Dilution required, RDL has been increased accordingly.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: Iris Verástegui

AGAT Laboratories

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Exceedance Summary

AGAT WORK ORDER: 24T144880

PROJECT: M1554

CLIENT NAME: GM BLUEPLAN

ATTENTION TO: Jessica Weller

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
5830353	SW-1	ON PWQO	Lindsay Surface Water Package	Total Boron	mg/L	0.2	0.689
5830353	SW-1	ON PWQO	Lindsay Surface Water Package	Total Iron	mg/L	0.3	0.887
5830361	SW-3	ON PWQO	Lindsay Surface Water Package	Total Boron	mg/L	0.2	0.628
5830361	SW-3	ON PWQO	Lindsay Surface Water Package	Total Iron	mg/L	0.3	1.72

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Quality Assurance

CLIENT NAME: GM BLUEPLAN
AGAT WORK ORDER: 24T144880
PROJECT: M1554
ATTENTION TO: Jessica Weller
SAMPLING SITE:
SAMPLED BY:

Water Analysis

RPT Date: May 13, 2024

PARAMETER	Batch	Sample Id	DUPLICATE			Method Blank	REFERENCE MATERIAL				METHOD BLANK SPIKE			MATRIX SPIKE		
			Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
Lindsay Surface Water Package																
Electrical Conductivity	5832463		931	941	1.1%	< 2	96%	90%	110%							
pH	5832463		8.04	8.11	0.9%	NA	100%	90%	110%							
Alkalinity (as CaCO3)	5832463		422	428	1.4%	< 5	106%	80%	120%							
Chloride	5830353	5830353	27.6	27.8	0.7%	< 0.10	94%	70%	130%	100%	80%	120%	103%	70%	130%	
Nitrate as N	5830353	5830353	0.72	0.72	0.0%	< 0.05	92%	70%	130%	94%	80%	120%	95%	70%	130%	
Nitrite as N	5830353	5830353	<0.05	<0.05	NA	< 0.05	94%	70%	130%	96%	80%	120%	96%	70%	130%	
Sulphate	5830353	5830353	41.3	41.4	0.2%	< 0.10	92%	70%	130%	95%	80%	120%	97%	70%	130%	
Ammonia as N	5832460		0.03	0.03	NA	< 0.02	105%	70%	130%	103%	80%	120%	93%	70%	130%	
Total Kjeldahl Nitrogen	5836990		9.31	9.45	1.5%	< 0.10	102%	70%	130%	88%	80%	120%	NA	70%	130%	
Total Phosphorus	5835439		0.05	0.05	NA	< 0.02	100%	70%	130%	106%	80%	120%	96%	70%	130%	
Dissolved Organic Carbon	5820917		10.9	10.9	0.0%	< 0.5	106%	90%	110%	101%	90%	110%	NA	80%	120%	
Phenols	5830575		<0.001	<0.001	NA	< 0.001	98%	90%	110%	97%	90%	110%	102%	80%	120%	
Sulphide	5836132		<0.01	<0.01	NA	< 0.01	99%	90%	110%	101%	90%	110%	101%	80%	120%	
Total Potassium	5833618		24.9	25.7	3.2%	< 0.50	102%	70%	130%	101%	80%	120%	106%	70%	130%	
Total Sodium	5833618		375	364	3.0%	< 0.10	111%	70%	130%	117%	80%	120%	104%	70%	130%	
Total Antimony	5833618		<0.003	<0.003	NA	< 0.003	101%	70%	130%	97%	80%	120%	102%	70%	130%	
Total Arsenic	5833618		<0.003	<0.003	NA	< 0.003	100%	70%	130%	96%	80%	120%	105%	70%	130%	
Total Barium	5833618		0.031	0.031	0.0%	< 0.002	100%	70%	130%	95%	80%	120%	108%	70%	130%	
Total Beryllium	5833618		<0.001	<0.001	NA	< 0.001	90%	70%	130%	106%	80%	120%	101%	70%	130%	
Total Boron	5833618		0.189	0.201	6.2%	< 0.010	89%	70%	130%	119%	80%	120%	110%	70%	130%	
Total Cadmium	5833618		0.0002	0.0002	NA	< 0.0001	98%	70%	130%	96%	80%	120%	98%	70%	130%	
Total Chromium	5833618		<0.003	<0.003	NA	< 0.003	99%	70%	130%	102%	80%	120%	108%	70%	130%	
Total Cobalt	5833618		<0.0005	<0.0005	NA	< 0.0005	98%	70%	130%	90%	80%	120%	97%	70%	130%	
Total Copper	5833618		0.002	0.003	NA	< 0.002	100%	70%	130%	99%	80%	120%	96%	70%	130%	
Total Iron	5833618		0.203	0.209	NA	< 0.050	102%	70%	130%	96%	80%	120%	106%	70%	130%	
Total Lead	5833618		<0.0005	<0.0005	NA	< 0.0005	95%	70%	130%	95%	80%	120%	94%	70%	130%	
Total Molybdenum	5833618		0.005	0.006	NA	< 0.002	104%	70%	130%	96%	80%	120%	97%	70%	130%	
Total Nickel	5833618		0.003	<0.003	NA	< 0.003	100%	70%	130%	93%	80%	120%	102%	70%	130%	
Total Selenium	5833618		0.002	<0.002	NA	< 0.002	99%	70%	130%	96%	80%	120%	98%	70%	130%	
Total Silver	5833618		0.0001	0.0001	NA	< 0.0001	100%	70%	130%	86%	80%	120%	84%	70%	130%	
Total Thallium	5833618		<0.0003	<0.0003	NA	< 0.0003	88%	70%	130%	89%	80%	120%	90%	70%	130%	
Total Vanadium	5833618		0.003	0.003	NA	< 0.002	103%	70%	130%	108%	80%	120%	115%	70%	130%	
Total Zinc	5833618		<0.020	<0.020	NA	< 0.020	93%	70%	130%	107%	80%	120%	98%	70%	130%	

Comments: NA signifies Not Applicable.
Duplicate NA: results are under 5X the RDL and will not be calculated.
Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.

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Quality Assurance

CLIENT NAME: GM BLUEPLAN

AGAT WORK ORDER: 24T144880

PROJECT: M1554

ATTENTION TO: Jessica Weller

SAMPLING SITE:

SAMPLED BY:

Water Analysis (Continued)

RPT Date: May 13, 2024			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Certified By: Iris Verástegui

AGAT Laboratories

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Method Summary

CLIENT NAME: GM BLUEPLAN

AGAT WORK ORDER: 24T144880

PROJECT: M1554

ATTENTION TO: Jessica Weller

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	modified from SM 2510 B	PC TITRATE
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
Alkalinity (as CaCO3)	INOR-93-6000	Modified from SM 2320 B	PC TITRATE
Hardness (as CaCO3) (Calculated)	MET-93-6105	modified from EPA SW-846 6010C & 200.7 & SM 2340 B	CALCULATION
Chloride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ammonia as N	INOR-93-6059	modified from SM 4500-NH3 H	LACHAT FIA
Total Kjeldahl Nitrogen	INOR-93-6048	modified from EPA 351.2 and SM 4500-NORG D	LACHAT FIA
Total Phosphorus	INOR-93-6022	modified from SM 4500-P B and SM 4500-P E	SPECTROPHOTOMETER
Dissolved Organic Carbon	INOR-93-6049	modified from SM 5310 B	SHIMADZU CARBON ANALYZER
Phenols	INOR-93-6072	modified from SM 5530 D	LACHAT FIA
Sulphide	INOR-93-6054	modified from SM 4500 S2- D	SPECTROPHOTOMETER
Total Potassium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
Total Sodium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
Total Antimony	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Arsenic	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Barium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Beryllium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Boron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cadmium	MET -93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Chromium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cobalt	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Copper	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Iron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Lead	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Molybdenum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Nickel	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Selenium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Silver	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Thallium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS

AGAT Laboratories

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FAX (905)712-5122
http://www.agatlabs.com

Method Summary

CLIENT NAME: GM BLUEPLAN

AGAT WORK ORDER: 24T144880

PROJECT: M1554

ATTENTION TO: Jessica Weller

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Total Vanadium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Lab Filtration DOC	SR-78-9001		FILTRATION

AGAT Laboratories

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MISSISSAUGA, ONTARIO
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TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: **GEI CONSULTANTS**
1260 Second Avenue East, Unit 1
OWEN SOUND, ON N4K2J3
(519) 376-1805

ATTENTION TO: **Jessica Weller**

PROJECT: **M1554 - Lindsay**

AGAT WORK ORDER: **24T220819**

WATER ANALYSIS REVIEWED BY: **Nivine Basily, Inorganic Team Lead**

DATE REPORTED: **Nov 27, 2024**

PAGES (INCLUDING COVER): **5**

VERSION*: **1**

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

Notes

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FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 24T220819

PROJECT: M1554 - Lindsay

CLIENT NAME: GEI CONSULTANTS

ATTENTION TO: Jessica Weller

SAMPLING SITE:Lindsay

SAMPLED BY:

Lindsay Groundwater Package

DATE RECEIVED: 2024-11-14

DATE REPORTED: 2024-11-27

		SAMPLE DESCRIPTION:		TW-1		TW-2		TW-3	TW-4		Robbins Well
		SAMPLE TYPE:		Water		Water		Water	Water		Water
		DATE SAMPLED:		2024-11-12		2024-11-12		2024-11-12	2024-11-12		2024-11-12
Parameter	Unit	G / S	RDL	6322924	RDL	6323037	RDL	6323038	6323039	RDL	6323042
Electrical Conductivity	uS/cm		2	755	2	1130	2	619	520	2	1130
pH	pH Units		NA	7.83	NA	7.80	NA	7.85	7.96	NA	8.04
Alkalinity (as CaCO3)	mg/L		5	426	5	494	5	361	305	5	320
Hardness (as CaCO3) (Calculated)	mg/L		0.5	366	0.5	430	0.5	310	264	0.5	223
Chloride	mg/L		0.10	12.5	0.12	44.6	0.10	8.86	3.71	0.12	183
Nitrate as N	mg/L		0.05	0.23	0.05	<0.05	0.05	<0.05	<0.05	0.05	<0.05
Nitrite as N	mg/L		0.05	<0.05	0.05	<0.05	0.05	<0.05	<0.05	0.05	<0.05
Sulphate	mg/L		0.10	41.9	0.10	118	0.10	8.69	12.0	0.10	17.1
Total Phosphorus	mg/L		0.02	0.06	0.02	0.11	0.02	0.08	0.08	0.02	0.06
Dissolved Organic Carbon	mg/L		0.5	5.5	0.5	8.9	0.5	6.4	2.2	0.5	3.4
Phenols	mg/L		0.001	<0.001	0.001	<0.001	0.001	<0.001	<0.001	0.001	<0.001
Ammonia as N	mg/L		0.02	0.14	0.02	1.01	0.02	0.26	<0.02	0.02	<0.02
Dissolved Calcium	mg/L		0.05	82.2	0.05	103	0.05	65.9	67.1	0.05	55.5
Dissolved Magnesium	mg/L		0.05	39.1	0.05	42.0	0.05	35.4	23.4	0.05	20.4
Dissolved Potassium	mg/L		0.50	1.70	0.50	6.55	0.50	1.40	<0.50	0.50	<0.50
Dissolved Sodium	mg/L		0.05	11.5	0.05	29.1	0.05	5.43	1.13	0.05	103
Dissolved Boron	mg/L		0.010	0.279	0.010	0.530	0.010	0.063	<0.010	0.010	0.016
Dissolved Iron	mg/L		0.020	<0.020	0.020	0.025	0.020	0.022	<0.020	0.020	0.021
Lab Filtration DOC				Y		Y		Y	Y		Y
Lab Filtration Metals				Y		Y		Y	Y		Y

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

6322924-6323042 Metals analysis completed on a filtered sample.

Dilution required, RDL has been increased accordingly.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

AGAT Laboratories

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FAX (905)712-5122
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Quality Assurance

CLIENT NAME: GEI CONSULTANTS

PROJECT: M1554 - Lindsay

SAMPLING SITE:Lindsay

AGAT WORK ORDER: 24T220819

ATTENTION TO: Jessica Weller

SAMPLED BY:

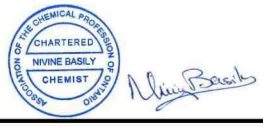
Water Analysis

RPT Date: Nov 27, 2024			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Lindsay Groundwater Package															
Electrical Conductivity	6321581		1970	1970	0.0%	< 2	105%	80%	120%						
pH	6321581		7.53	7.58	0.7%	NA	100%	90%	110%						
Alkalinity (as CaCO3)	6321581		506	519	2.5%	< 5	108%	80%	120%						
Chloride	6321571		6.94	6.92	0.3%	< 0.10	98%	70%	130%	101%	80%	120%	100%	70%	130%
Nitrate as N	6321571		0.57	0.58	1.7%	< 0.05	94%	70%	130%	98%	80%	120%	96%	70%	130%
Nitrite as N	6321571		<0.05	<0.05	NA	< 0.05	96%	70%	130%	102%	80%	120%	94%	70%	130%
Sulphate	6321571		8.10	8.39	3.5%	< 0.10	96%	70%	130%	98%	80%	120%	96%	70%	130%
Total Phosphorus	6322924	6322924	0.06	0.06	NA	< 0.02	101%	70%	130%	104%	80%	120%	113%	70%	130%
Dissolved Organic Carbon	6321392		13.1	12.7	3.1%	< 0.5	93%	90%	110%	97%	90%	110%	NA	80%	120%
Phenols	6325717		<0.001	<0.001	NA	< 0.001	99%	90%	110%	96%	90%	110%	97%	80%	120%
Ammonia as N	6321588		0.29	0.28	3.5%	< 0.02	104%	70%	130%	113%	80%	120%	109%	70%	130%
Dissolved Calcium	6322924	6322924	82.2	79.4	3.5%	< 0.05	98%	70%	130%	82%	80%	120%	93%	70%	130%
Dissolved Magnesium	6322924	6322924	39.1	37.4	4.4%	< 0.05	98%	70%	130%	90%	80%	120%	114%	70%	130%
Dissolved Potassium	6322924	6322924	1.70	1.73	NA	< 0.50	115%	70%	130%	81%	80%	120%	80%	70%	130%
Dissolved Sodium	6322924	6322924	11.5	10.6	8.1%	< 0.05	99%	70%	130%	81%	80%	120%	101%	70%	130%
Dissolved Boron	6322924	6322924	0.279	0.270	3.3%	< 0.010	98%	70%	130%	103%	80%	120%	104%	70%	130%
Dissolved Iron	6322924	6322924	<0.020	<0.020	NA	< 0.010	102%	70%	130%	100%	80%	120%	91%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate NA: results are under 5X the RDL and will not be calculated.

Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.

Certified By:



AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Method Summary

CLIENT NAME: GEI CONSULTANTS

AGAT WORK ORDER: 24T220819

PROJECT: M1554 - Lindsay

ATTENTION TO: Jessica Weller

SAMPLING SITE:Lindsay

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
Alkalinity (as CaCO3)	INOR-93-6000	Modified from SM 2320 B	PC TITRATE
Hardness (as CaCO3) (Calculated)	MET-93-6105	modified from EPA SW-846 6010C & 200.7 & SM 2340 B	CALCULATION
Chloride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Total Phosphorus	INOR-93-6057	modified from LACHAT 10-115-01-3A	LACHAT FIA
Dissolved Organic Carbon	INOR-93-6049	modified from SM 5310 B	SHIMADZU CARBON ANALYZER
Phenols	INOR-93-6072	mod from SM 510C, EPA 420.2, ISO 3696, ASTM D1193	SEGMENTED FLOW ANALYSIS
Ammonia as N	INOR-93-6059	modified from SM 4500-NH3 H	LACHAT FIA
Dissolved Calcium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP/MS
Dissolved Magnesium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
Dissolved Potassium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP/MS
Dissolved Sodium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP/MS
Dissolved Boron	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Iron	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Lab Filtration DOC	SR-78-9001		FILTRATION
Lab Filtration Metals	SR-78-9001		FILTRATION

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: GEI CONSULTANTS
1260 Second Avenue East, Unit 1
OWEN SOUND, ON N4K2J3
(519) 376-1805

ATTENTION TO: Jessica Weller

PROJECT: M1554 - Lindsay

AGAT WORK ORDER: 24T220820

WATER ANALYSIS REVIEWED BY: Nivine Basily, Inorganic Team Lead

DATE REPORTED: Nov 26, 2024

PAGES (INCLUDING COVER): 8

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

Notes

Disclaimer:

- *All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.*
- *All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.*
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- *This document is signed by an authorized signatory who meets the requirements of the MELCCFP, CALA, CCN and NELAP.*
- *For environmental samples in the Province of Quebec: The analysis is performed on and results apply to samples as received. A temperature above 6°C upon receipt, as indicated in the Sample Reception Notification (SRN), could indicate the integrity of the samples has been compromised if the delay between sampling and submission to the laboratory could not be minimized.*

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MISSISSAUGA, ONTARIO
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Certificate of Analysis

AGAT WORK ORDER: 24T220820

PROJECT: M1554 - Lindsay

CLIENT NAME: GEI CONSULTANTS

SAMPLING SITE:Lindsay

ATTENTION TO: Jessica Weller

SAMPLED BY:

Lindsay Surface Water Package

DATE RECEIVED: 2024-11-14

DATE REPORTED: 2024-11-26

		SAMPLE DESCRIPTION:		SW-1
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2024-11-12
Parameter	Unit	G / S	RDL	6321430
Electrical Conductivity	uS/cm		2	798
pH	pH Units		NA	7.91
Alkalinity (as CaCO3)	mg/L		5	425
Hardness (as CaCO3) (Calculated)	mg/L		0.5	368
Chloride	mg/L		0.10	27.6
Nitrate as N	mg/L		0.05	<0.05
Nitrite as N	mg/L		0.05	<0.05
Sulphate	mg/L		0.10	36.5
Ammonia as N	mg/L		0.02	0.41
Total Kjeldahl Nitrogen	mg/L		0.10	0.46
Total Phosphorus	mg/L		0.02	<0.02
Dissolved Organic Carbon	mg/L		0.5	11.7
Phenols	mg/L		0.001	<0.001
Sulphide	mg/L		0.01	<0.01
Total Potassium	mg/L		0.50	7.01
Total Sodium	mg/L		0.10	21.8
Total Antimony	mg/L		0.003	<0.003
Total Arsenic	mg/L		0.003	<0.003
Total Barium	mg/L		0.002	0.024
Total Beryllium	mg/L		0.001	<0.001
Total Boron	mg/L		0.010	0.250
Total Cadmium	mg/L		0.0001	<0.0001
Total Chromium	mg/L		0.003	<0.003
Total Cobalt	mg/L		0.0005	<0.0005
Total Copper	mg/L		0.002	<0.002
Total Iron	mg/L		0.050	2.55
Total Lead	mg/L		0.0005	<0.0005
Total Molybdenum	mg/L		0.002	<0.002
Total Nickel	mg/L		0.003	0.006
Total Selenium	mg/L		0.002	<0.002

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 24T220820

PROJECT: M1554 - Lindsay

CLIENT NAME: GEI CONSULTANTS

ATTENTION TO: Jessica Weller

SAMPLING SITE:Lindsay

SAMPLED BY:

Lindsay Surface Water Package

DATE RECEIVED: 2024-11-14

DATE REPORTED: 2024-11-26

		SAMPLE DESCRIPTION:		SW-1
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2024-11-12
Parameter	Unit	G / S	RDL	6321430
Total Silver	mg/L		0.0001	<0.0001
Total Thallium	mg/L		0.0003	<0.0003
Total Vanadium	mg/L		0.002	<0.002
Total Zinc	mg/L		0.020	<0.020

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

AGAT Laboratories

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Quality Assurance

CLIENT NAME: GEI CONSULTANTS

PROJECT: M1554 - Lindsay

SAMPLING SITE:Lindsay

AGAT WORK ORDER: 24T220820

ATTENTION TO: Jessica Weller

SAMPLED BY:

Water Analysis

RPT Date: Nov 26, 2024

PARAMETER	Batch	Sample Id	DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
			Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Lindsay Surface Water Package															
Electrical Conductivity	6321581		1970	1970	0.0%	< 2	105%	80%	120%						
pH	6321581		7.53	7.58	0.7%	NA	100%	90%	110%						
Alkalinity (as CaCO3)	6321581		506	519	2.5%	< 5	108%	80%	120%						
Chloride	6321392		34.0	34.1	0.3%	< 0.10	97%	70%	130%	100%	80%	120%	101%	70%	130%
Nitrate as N	6321392		<0.05	<0.05	NA	< 0.05	94%	70%	130%	99%	80%	120%	95%	70%	130%
Nitrite as N	6321392		<0.05	<0.05	NA	< 0.05	98%	70%	130%	92%	80%	120%	96%	70%	130%
Sulphate	6321392		81.3	81.7	0.5%	< 0.10	95%	70%	130%	98%	80%	120%	97%	70%	130%
Ammonia as N	6321588		0.29	0.28	3.5%	< 0.02	104%	70%	130%	113%	80%	120%	109%	70%	130%
Total Kjeldahl Nitrogen	6333985		0.25	0.23	NA	< 0.10	91%	70%	130%	95%	80%	120%	77%	70%	130%
Total Phosphorus	6321397		<0.02	<0.02	NA	0.03	98%	70%	130%	89%	80%	120%	94%	70%	130%
Dissolved Organic Carbon	6321423		28.3	27.7	2.1%	< 0.5	99%	90%	110%	94%	90%	110%	NA	80%	120%
Phenols	6321392		<0.001	<0.001	NA	< 0.001	102%	90%	110%	101%	90%	110%	93%	80%	120%
Sulphide	6333292		<0.01	<0.01	NA	< 0.01	99%	90%	110%	99%	90%	110%	101%	80%	120%
Total Potassium	6320264		1.60	1.69	NA	< 0.50	100%	70%	130%	98%	80%	120%	98%	70%	130%
Total Sodium	6320264		30.7	31.1	1.3%	< 0.10	110%	70%	130%	113%	80%	120%	110%	70%	130%
Total Antimony	6320264		<0.003	<0.003	NA	< 0.003	106%	70%	130%	109%	80%	120%	104%	70%	130%
Total Arsenic	6320264		<0.003	<0.003	NA	< 0.003	95%	70%	130%	99%	80%	120%	102%	70%	130%
Total Barium	6320264		0.159	0.160	0.6%	< 0.002	101%	70%	130%	103%	80%	120%	104%	70%	130%
Total Beryllium	6320264		<0.001	<0.001	NA	< 0.001	100%	70%	130%	90%	80%	120%	92%	70%	130%
Total Boron	6320264		0.092	0.094	2.2%	< 0.010	104%	70%	130%	96%	80%	120%	96%	70%	130%
Total Cadmium	6320264		<0.0001	<0.0001	NA	< 0.0001	107%	70%	130%	109%	80%	120%	105%	70%	130%
Total Chromium	6320264		<0.003	<0.003	NA	< 0.003	101%	70%	130%	108%	80%	120%	110%	70%	130%
Total Cobalt	6320264		<0.0005	<0.0005	NA	< 0.0005	103%	70%	130%	109%	80%	120%	109%	70%	130%
Total Copper	6320264		0.003	<0.002	NA	< 0.002	103%	70%	130%	105%	80%	120%	106%	70%	130%
Total Iron	6320264		1.23	1.22	0.8%	< 0.050	107%	70%	130%	114%	80%	120%	106%	70%	130%
Total Lead	6320264		0.0006	0.0006	NA	< 0.0005	97%	70%	130%	94%	80%	120%	95%	70%	130%
Total Molybdenum	6320264		<0.002	<0.002	NA	< 0.002	96%	70%	130%	100%	80%	120%	103%	70%	130%
Total Nickel	6320264		<0.003	<0.003	NA	< 0.003	104%	70%	130%	109%	80%	120%	107%	70%	130%
Total Selenium	6320264		<0.002	<0.002	NA	< 0.002	99%	70%	130%	91%	80%	120%	94%	70%	130%
Total Silver	6320264		<0.0001	<0.0001	NA	< 0.0001	98%	70%	130%	98%	80%	120%	99%	70%	130%
Total Thallium	6320264		<0.0003	<0.0003	NA	< 0.0003	104%	70%	130%	109%	80%	120%	101%	70%	130%
Total Vanadium	6320264		<0.002	<0.002	NA	< 0.002	107%	70%	130%	117%	80%	120%	115%	70%	130%
Total Zinc	6320264		<0.020	<0.020	NA	< 0.020	104%	70%	130%	107%	80%	120%	106%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate NA: results are under 5X the RDL and will not be calculated.

Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.

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CANADA L4Z 1Y2
TEL (905)712-5100
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Quality Assurance

CLIENT NAME: GEI CONSULTANTS

PROJECT: M1554 - Lindsay

SAMPLING SITE:Lindsay

AGAT WORK ORDER: 24T220820

ATTENTION TO: Jessica Weller

SAMPLED BY:

Water Analysis (Continued)

RPT Date: Nov 26, 2024			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Certified By:

AGAT Laboratories

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MISSISSAUGA, ONTARIO
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Method Summary

CLIENT NAME: GEI CONSULTANTS

AGAT WORK ORDER: 24T220820

PROJECT: M1554 - Lindsay

ATTENTION TO: Jessica Weller

SAMPLING SITE:Lindsay

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
Alkalinity (as CaCO3)	INOR-93-6000	Modified from SM 2320 B	PC TITRATE
Hardness (as CaCO3) (Calculated)	MET-93-6105	modified from EPA SW-846 6010C & 200.7 & SM 2340 B	CALCULATION
Chloride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ammonia as N	INOR-93-6059	modified from SM 4500-NH3 H	LACHAT FIA
Total Kjeldahl Nitrogen	INOR-93-6048	modified from EPA 351.2 and SM 4500-NORG D	LACHAT FIA
Total Phosphorus	INOR-93-6022	modified from SM 4500-P B and SM 4500-P E	SPECTROPHOTOMETER
Dissolved Organic Carbon	INOR-93-6049	modified from SM 5310 B	SHIMADZU CARBON ANALYZER
Phenols	INOR-93-6072	mod from SM 510C, EPA 420.2, ISO 3696, ASTM D1193	SEGMENTED FLOW ANALYSIS
Sulphide	INOR-93-6054	modified from SM 4500 S2- D	SPECTROPHOTOMETER
Total Potassium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
Total Sodium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
Total Antimony	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Arsenic	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Barium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Beryllium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Boron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cadmium	MET -93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Chromium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cobalt	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Copper	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Iron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Lead	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Molybdenum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Nickel	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Selenium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Silver	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Thallium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
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Method Summary

CLIENT NAME: GEI CONSULTANTS

AGAT WORK ORDER: 24T220820

PROJECT: M1554 - Lindsay

ATTENTION TO: Jessica Weller

SAMPLING SITE:Lindsay

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Total Vanadium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS

Appendix E Historical Groundwater Quality Results

HISTORICAL GROUNDWATER QUALITY DATA TW-1

Parameter	Conductivity	pH	Hardness	Alkalinity	Chloride	Nitrate	Nitrite	Sulphate	Sodium	Potassium	Iron	Phosphorus	DOC	Phenols	Ammonia	TKN	Calcium	Magnesium
Units	uS/cm	Unitless	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ODWS	NV	6.5-8.5	80-100	30-500	250	10	1.0	500	200	NV	0.3	NV	5.0	NV	NV	NV	NV	NV
	NA	OG	OG	OG	AO	MAC	MAC	AO	AO	NA	AO	NA	AO	NA	NA	NA	NA	NA
RUC	NA	6.5-8.5	272	379	126	2.53	0.3	254	100	NA	0.20	NA	4.1	NA	NA	NA	NA	NA
Sep-00	559	7.10	**336**	292	3.0	<0.1	<0.1	12.4	1.12	1.84	0.05	0.05		<0.001	<0.01			
Nov-01	539	7.29	**304**	298	3.2	<0.1	<0.1	9.6	<1.0	<1.0	0.03	0.10		<0.001	<0.01			
Dec-02	551	7.59	**313**	288	4.0	0.2	<0.1	12	2.70	1.10	<0.02	0.07	2.8	<0.001	0.01			
Sep-03	664	8.34	**329**	285	37.5*	0.1		15	3.90		<0.005	0.06	**16.0***	<0.001	0.03	0.1		
Sep-04	522	7.25	**305**	297	3.0	0.2		11	1.00		<0.005	0.03	2.2	<0.001	<0.01	0.12		
Sep-05	525	7.47	**291**	280	3.4	0.1		11	1.20		<0.005	0.03	**7.2**	<0.001	0.04	0.09		
Apr-06	369	7.93	212	184	1.43	<0.05	<0.05	4.76	1.02	0.48	**1.15**	<0.05	4.0	<0.001	<0.05	0.17		
Nov-06	518	8.04	**276**	276	2.21	<0.05	<0.05	6.9	0.93	0.47	0.17	<0.05	**5.5**	<0.001	<0.02	<0.10		
Apr-07	393	7.76	224	206	1.44	<0.05	<0.05	5.32	0.65	0.26	0.11	<0.05	**4.7**	<0.001	0.06	0.52		
Nov-07	542	7.74	**323**	277	5.91	0.18	<0.05	16.4	2.62	2.94	<0.01	<0.05	3.5	<0.001	<0.02	0.20		
Apr-08	350	8.24	211	194	1.23	<0.05	<0.05	5.73	0.79	0.38	0.19	0.08	**6.1**	<0.001	<0.02	0.25		
Oct-08	531	8.03	**316**	269	2.54	0.07	<0.05	9.43	1.30	0.87	0.05	<0.05	2.8	<0.001	<0.02	0.48		
Apr-09	403	8.08	229	210	1.66	<0.05	<0.05	5.11	0.60	0.27	<0.01	<0.05	**4.9**	0.003	<0.02	0.35		
Nov-09	516	8.13	**327**	282	1.76	<0.05	<0.05	6.98	0.78	0.46	<0.01	<0.05	**5.3**	<0.001	<0.02	0.25		
Apr-10	486	8.13	**289**	272	1.78	<0.05	<0.05	8.68	0.79	0.46	<0.01		2.0	<0.001	<0.02	<0.10		
Nov-10	499	8.14	**330**	303	2.41	0.06	<0.05	8.12	0.99	0.70	<0.01	0.06	3.1	<0.001	<0.02	0.23		
Apr-11	385	7.81	214	204	1.38	<0.05	<0.05	6.29	0.62	0.28	<0.01	<0.05	**6.0**	<0.001	0.09	0.45		
Nov-11	413	7.95	**281**	283	1.94	<0.05	<0.05	5.28	0.68	0.31	<0.01	0.04	**5.3**	<0.001	<0.02	0.28		
Apr-12	468	8.04	258	262	1.98	<0.05	<0.05	5.37	0.63	0.23	**0.44**	0.02	3.7	<0.001	<0.02	0.47		
Nov-12	464	8.15	**282**	269	2.73	<0.05	<0.05	5.18	0.76	0.14	0.01	<0.05	**4.9**	<0.001	<0.02	0.12	59.8	32.1
Nov-13	524	8.07	**304**	276	0.57	<0.05	<0.05	0.92	0.69	0.36	<0.01	<0.05	**5.4**	<0.001	<0.02	0.29	62.6	35.8
Oct-14	576	7.80	**318**	287	8.31	0.18	<0.10	12.2	3.54	0.86	0.01	<0.05	3.2	<0.001	<0.02	<0.10	68.5	35.7
Oct-15	592	7.99	**308**	301	10.0	0.14	<0.10	17.0	3.74	0.83	0.17	0.15	2.7	<0.001	<0.02	0.61	68.3	33.4
Nov-16	530	8.29	**280**	279	5.04	0.12	<0.10	9.27	1.81	0.83	<0.01	0.09	3.9	<0.001	<0.02	0.17	62.2	30.3
Sep-17	583	8.09	**291**	298	6.23	0.14	<0.10	11.4	2.70	0.83	**0.49**	0.07	4.0	<0.001	<0.02	0.35	62.3	32.8
Nov-18	533	7.95	**296**	293	2.18	0.07	<0.05	5.65	1.08	0.59	<0.010	<0.05	**4.4**	<0.001	0.06	0.16	62.2	34.2
Oct-19	580	7.79	**320**	296	10.3	0.21	<0.05	26.6	6.49	1.16	0.03	0.20	**5.6**	<0.001	<0.02	0.14	69.8	35.5
Oct-20	576	7.84	**306**	312	7.93	0.22	<0.05	19.6	5.18	1.24	<0.010	0.13	4.0	0.009	<0.02	0.26	68.5	32.8
Apr-21	537	7.80	**349**	278	3.17	0.08	<0.05	6.38	1.45	<0.50	**0.38**	0.07	3.6	0.002	<0.02	<0.10	72.0	41.0
Oct-21	598	7.57	**305**	290	6.89	0.12	<0.05	16.7	3.90	0.98	<0.010	0.04	**30.9**	0.026	<0.02	0.18	66.1	34.0
Sep-22	600	7.81	247	281	4.83	0.08	<0.05	13.6	2.04	<0.05	0.038	0.06	**5.6**	0.032	<0.02	0.26	55.2	26.5
Nov-23	585	7.20	**285**	340	41.1	<0.05	<0.05	53.2	3.32	0.81	<0.010	0.05	2.8	0.006	<0.02	<0.10	62.6	31.2
Nov-24	755	7.83	**366**	**426**	12.5	0.23	<0.05	41.9	11.5	1.70	<0.020	0.06	**5.5**	<0.001	0.14	NM	82.2	39.1
Average	523	7.86	**292**	278	5.19	0.089	<0.10	12.27	2.20	0.79	0.072	0.055	**5.19**	<0.001	0.021	0.23	65.9	33.9
Std. Dev.	85.5	0.32	39.8	44.0	7.21	0.070	NA	10.58	2.27	0.61	0.13	0.042	5.03	NA	0.028	0.16	6.51	3.59

HISTORICAL GROUNDWATER QUALITY DATA TW-2

Parameter	Conductivity	pH	Hardness	Alkalinity	Chloride	Nitrate	Nitrite	Sulphate	Sodium	Potassium	Iron	Phosphorus	DOC	Phenols	Ammonia	TKN	Calcium	Magnesium
Units	uS/cm	Unitless	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ODWS	NV	6.5-8.5	80-100	30-500	250	10	1.0	500	200	NV	0.3	NV	5.0	NV	NV	NV	NV	NV
	NA	OG	OG	OG	AO	MAC	MAC	AO	AO	NA	AO	NA	AO	NA	NA	NA	NA	NA
RUC	NA	6.5-8.5	272	379	126	2.53	0.3	254	100	NA	0.20	NA	4.1	NA	NA	NA	NA	NA
Sep-00	941	7.03	**527**	**413**	36.7	0.9	<0.1	51.7	15.8	7.66	<0.01	0.01		<0.001	<0.01			
Nov-01	771	7.38	**366**	333	23.1	<0.1	<0.1	50.9	12.9	9.6	0.04	0.19		<0.001	0.34			
Dec-02	957	7.43	**465**	333	61.0	0.9	0.20	105	25.8	11.3	<0.02	0.04	**4.2**	<0.001	0.01			
Sep-03	966	8.46	**493**	348	48.7	0.1		157	25.0		<0.005	0.04	**6.0**	<0.001	0.05	0.37		
Sep-03 D	956	8.42	**489**	336	48.9	0.2		157	24.7		0.01	0.05	**5.0**	<0.001	0.03	0.33		
Sep-04	1010	7.10	**525**	**408**	60.5	0.7		104	22.8		<0.005	0.50	3.2	<0.001	0.02	0.37		
Sep-05	1260	7.21	**707**	**435**	82.1	0.5		171	32.9		0.03	0.05	**12.8**	<0.001	0.08	0.32		
Apr-06	1330	7.85	**693**	357	37.3	0.51	<0.05	**331**	31.8	23.0	**2.09***	<0.05	**9.0**	0.02	<0.05	0.51		
Nov-06	1060	8.12	**497**	**383**	39.7	<0.05	<0.05	160	21.5	14.0	**0.30**	<0.05	**11.1**	<0.001	0.02	0.37		
Apr-07	1210	7.82	**616**	**424**	48.5	0.17	<0.05	216	31.6	19.5	**0.29**	<0.05	**8.1**	0.00	0.50	0.82		
Nov-07	1020	7.65	**549**	**383**	58.2	0.23	<0.05	126	29.1	16.1	<0.01	<0.05	**5.6**	<0.001	0.12	0.49		
Apr-08	858	8.22	**426**	350	33.5	0.45	<0.05	104	25.1	16.4	**0.27**	<0.05	**8.1**	<0.001	0.17	0.54		
Oct-08	1100	7.85	**561**	**561**	60.4	0.22	<0.05	86.1	26.2	10.6	0.10	0.05	**4.8**	<0.001	0.49	2.10		
Apr-09	1220	7.94	**610**	**454**	49.5	<0.05	<0.05	164	33.4	17.1	<0.01	<0.05	**9.0**	<0.001	0.37	1.53		
Nov-09	1150	7.95	**587**	**469**	65.5	<0.05	<0.05	91.6	37.4	19.0	<0.01	<0.05	**10.2**	<0.001	0.36	1.56		
Apr-10	1070	8.04	**529**	**479**	66.2	0.09	0.18	72.1	41.8	17.7	<0.01		**5.7**	<0.001	0.29	1.11		
Nov-10	940	8.09	**531**	**435**	60.5	<0.05	<0.05	59.0	28.4	10.4	<0.01	<0.05	**4.2**	<0.001	0.03	0.32		
Apr-11	1030	7.79	**482**	**421**	56.8	<0.05	<0.05	81.1	35.4	13.8	0.01	<0.05	**7.0**	<0.001	0.06	1.54		
Nov-11	930	7.85	**441**	**490**	69.6	<0.05	<0.05	95.1	43.2	17.3	<0.01	0.03	**8.8**	<0.001	0.74	1.45		
Apr-12	1280	8.00	**578**	**529**	82.3	<0.05	<0.05	87.9	54.8	18.5	**0.35**	0.02	**8.0**	<0.001	0.70	1.75		
Nov-12	1090	7.97	**503**	**428**	91.7	<0.05	<0.05	96.9	52.7	17.6	0.04	<0.05	**6.9**	<0.001	0.97	1.31	113	53.7
Nov-13	1220	7.94	**591**	**455**	70.8	<0.25	<0.25	89.5	54.4	20.0	<0.01	<0.05	**10.5**	<0.001	1.49	2.00	129	65.4
Oct-14	1280	7.46	**560**	**474**	85.1	<0.25	<0.25	102	47.5	16.4	0.06	<0.05	**8.2**	0.001	0.88	1.27	126	59.5
Oct-15	1400	8.10	**594**	**544**	88.6	<0.25	<0.25	120	54.2	18.5	0.04	<0.05	**5.8**	<0.001	1.36	2.20	135	62.4
Nov-16	982	8.21	**448**	**386**	64.2	0.29	<0.25	67.8	25.4	7.5	<0.01	<0.05	3.8	<0.001	0.06	0.24	108	43.4
Sep-17	1100	8.05	**496**	**452**	51.4	<0.25	<0.25	70.7	28.0	9.4	**0.91**	<0.05	**5.9**	<0.001	0.40	0.76	115	50.8
Nov-18	1080	7.89	**490**	**469**	47.1	<0.25	<0.25	74.6	38.9	14.5	<0.010	<0.05	**10.3**	<0.001	0.32	0.86	110	52.3
Oct-19	1060	7.63	**536**	**463**	46.6	<0.25	<0.25	105	34.4	12.7	0.01	0.11	**7.5**	<0.001	0.67	1.28	125	54.3
Oct-20	961	7.80	**436**	**454**	40.5	<0.25	<0.25	64.9	26.6	10.9	<0.010	0.07	**6.6**	0.011	0.40	0.93	104	42.7
Apr-21	1020	7.82	**460**	**459**	34.6	<0.25	<0.25	40.5	29.9	12.9	**0.49**	0.04	**6.1**	0.004	0.11	0.58	106	47.4
Oct-21	1190	7.49	**498**	**512**	47.2	<0.05	<0.05	56.8	32.9	11.5	<0.010	<0.02	**18.0**	0.040	0.34	1.13	117	49.9
Sep-22	1500	7.54	**487**	**580**	75.9	<0.05	<0.05	113	48.6	13.4	0.016	0.17	**17.4**	0.067	1.09	2.34	113	49.8
Nov-23	1410	7.20	**568**	**622**	32.0	0.52	<0.05	33.5	57.9	15.1	0.025	0.27	**10.5**	0.008	0.41	1.29	132	57.9
Nov-24	1130	7.80	**430**	**494**	44.6	<0.05	<0.05	118	29.1	6.55	0.025	0.11	**8.9**	<0.001	1.01	NM	103	42.0
Average	1102	7.80	**523**	**445**	56.2	0.20	<0.25	107	34.1	14.3	0.09	0.065	**8.04**	<0.001	0.41	1.06	117	52.3
Std. Dev.	166	0.35	74	72.0	17.5	0.25	NA	57.2	11.6	4.17	0.19	0.10	3.45	NA	0.41	0.63	10.7	7.22

HISTORICAL GROUNDWATER QUALITY DATA TW-3

Parameter	Conductivity	pH	Hardness	Alkalinity	Chloride	Nitrate	Nitrite	Sulphate	Sodium	Potassium	Iron	Phosphorus	DOC	Phenols	Ammonia	TKN	Calcium	Magnesium
Units	uS/cm	Unitless	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ODWS	NV	6.5-8.5	80-100	30-500	250	10	1.0	500	200	NV	0.3	NV	5.0	NV	NV	NV	NV	NV
	NA	OG	OG	OG	AO	MAC	MAC	AO	AO	NA	AO	NA	AO	NA	NA	NA	NA	NA
RUC	NA	6.5-8.5	272	379	126	2.53	0.3	254	100	NA	0.20	NA	4.1	NA	NA	NA	NA	NA
Sep-00	519	7.19	**309**	260	6.7	<0.1	<0.1	18.5	2.07	2.02	0.08	0.01		<0.001	<0.01			
Nov-01	486	7.36	271	239	6.9	<0.1	<0.1	14.5	2.0	<1.0	0.05	0.02		<0.001	0.02			
Dec-02	659	7.56	**335**	252	26.2	0.10	<0.1	70	11.9	5.30	<0.02	0.02	4.0	<0.001	0.24			
Sep-03	970	8.43	**513**	324	64.3	<0.1		169	25.2		0.04	<0.01	**11**	<0.001	0.46	0.66		
Sep-04	543	7.21	**311**	273	12.6	<0.1		21	4.5		0.01	<0.01	3.9	<0.001	0.02	0.21		
Sep-04 D	555	7.24	**310**	279	12.7	<0.1		21	4.5		0.02	<0.01	3.7	<0.001	0.02	0.21		
Sep-05	670	7.44	**349**	302	26.1	<0.1		33	10.7		0.03	0.02	**13.0**	<0.001	0.25	0.45		
Sep-05 D	670	7.38	**345**	300	26.0	<0.1		33	10.6		0.03	0.01	**14.1**	<0.001	0.25	0.42		
Apr-06	494	7.94	261	235	8.15	<0.05	<0.05	14.2	3.8	0.94	**4.69***	<0.05	4.0	<0.001	0.07	0.22		
Nov-06	608	7.95	**294**	276	19.8	<0.05	<0.05	27	8.67	3.57	0.20	<0.05	**6.4**	<0.001	1.14	1.38		
Apr-07	518	7.70	268	242	11.7	<0.05	<0.05	23	4.32	1.19	0.15	<0.05	4.0	<0.001	0.31	0.19		
Nov-07	700	7.44	**374**	297	40.2	<0.05	<0.05	29.5	15.2	4.81	<0.010	<0.05	**8.0**	0.00	0.24	1.99		
Apr-08	501	8.24	266	247	14.6	<0.05	<0.05	21.1	5.03	1.81	0.19	<0.05	**5.7**	<0.001	0.43	0.42		
Oct-08	723	7.78	**391**	315	27.9	<0.05	<0.05	18.6	9.09	2.59	**0.29**	<0.05	**6.6**	<0.001	0.93	2.08		
Apr-09	529	7.89	**281**	248	13.4	<0.05	<0.05	12.9	5.04	1.79	**0.24**	<0.05	**5.7**	<0.001	0.43	1.22		
Nov-09	673	7.89	**331**	290	46.9	<0.05	<0.05	10.7	22.4	2.63	**0.28**	<0.05	**8.2**	<0.001	0.41	1.89		
Apr-10	590	7.97	**297**	280	29.8	<0.05	0.07	13.5	13.9	1.75	<0.01		**5.4**	<0.001	<0.02	0.85		
Nov-10	611	8.16	**348**	321	29.5	<0.05	<0.05	12.1	15.5	1.96	0.07	<0.05	**6.0**	<0.001	0.32	1.09		
Apr-11	562	7.82	**276**	271	15.9	<0.05	<0.05	15.3	5.8	1.60	0.02	<0.05	4.0	<0.001	0.08	0.98		
Nov-11	405	7.83	248	257	11.5	<0.05	<0.05	6.79	5.18	1.21	0.09	0.05	**6.9**	<0.001	0.28	0.61		
Apr-12	488	7.99	246	256	9.27	0.15	<0.05	6.81	4.2	0.96	**1.65**	<0.02	**5.1**	<0.001	0.16	0.74		
Nov-12	552	8.03	**295**	275	26.3	<0.05	<0.05	8.94	12.4	2.01	**0.93**	<0.05	**5.2**	<0.001	0.97	1.22	71.4	28.4
Nov-13	529	7.97	**282**	245	16.4	<0.10	<0.10	8.54	9.0	2.99	**0.28**	<0.05	**7.3**	<0.001	0.55	0.96	66.3	28.3
Oct-14	641	7.56	**326**	293	24.6	<0.10	<0.10	12.8	11.3	2.53	0.13	<0.05	**4.7**	<0.001	0.69	0.79	74.3	34.0
Oct-15	726	8.01	**344**	340	31.0	<0.25	<0.25	12.4	12.4	2.46	**0.72**	<0.05	**4.9**	<0.001	0.87	1.36	78.9	35.7
Nov-16	662	8.10	**300**	291	34.1	<0.10	<0.10	21.4	15.7	4.68	**0.29**	<0.05	**6.8**	<0.001	0.97	1.30	76.1	26.7
Sep-17	725	7.95	**336**	331	27.1	<0.10	<0.10	14.8	12.5	2.28	**1.15**	<0.05	**6.9**	<0.001	0.80	1.06	76.4	35.3
Nov-18	553	7.67	**283**	282	9.45	<0.05	<0.05	9.77	5.66	1.69	<0.010	<0.05	**6.4**	<0.001	0.27	0.51	62.7	30.8
Oct-19	569	7.56	**302**	289	17.3	<0.05	<0.05	14.5	9.24	1.89	0.39	<0.02	**6.7**	<0.001	0.45	0.63	67.4	32.4
Oct-20	519	7.85	271	278	13.5	0.05	<0.05	10.1	6.28	1.41	0.17	0.02	**6.5**	0.005	0.21	0.46	60.6	29.0
Apr-21	501	7.88	**301**	262	0.74	<0.05	<0.05	1.60	0.60	<0.50	0.21	0.03	1.3	0.002	<0.02	<0.10	77.8	25.9
Oct-21	611	7.51	**307**	304	9.74	<0.05	<0.05	8.08	4.92	1.20	<0.010	<0.02	**18.9**	0.024	0.16	0.55	65.9	34.7
Sep-22	623	7.66	**286**	284	10.4	<0.05	<0.05	9.20	4.36	0.83	0.22	<0.02	**8.2**	0.003	0.31	0.31	66.2	29.4
Nov-23	536	7.23	261	309	**199**	<0.05	<0.05	15.4	4.69	1.32	0.057	<0.02	**4.6**	0.004	0.28	0.37	56.7	29.1
Nov-24	619	7.85	**310**	361	8.86	<0.05	<0.05	8.69	5.43	1.40	0.022	0.08	**6.4**	<0.001	0.26	NM	65.9	35.4
Average	595	7.75	**309**	283	25.4	<0.10	<0.10	21.4	8.69	2.17	**0.24**	0.022	**6.68**	<0.001	0.37	0.84	69.0	31.1
Std. Dev.	103	0.31	49.6	30.5	32.9	NA	NA	28.3	5.60	1.17	0.36	0.014	3.38	NA	0.32	0.53	6.87	3.43

HISTORICAL GROUNDWATER QUALITY DATA TW-4

Parameter	Conductivity	pH	Hardness	Alkalinity	Chloride	Nitrate	Nitrite	Sulphate	Sodium	Potassium	Iron	Phosphorus	DOC	Phenols	Ammonia	TKN	Calcium	Magnesium
Units	uS/cm	Unitless	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ODWS	NV	6.5-8.5	80-100	30-500	250	10	1.0	500	200	NV	0.3	NV	5.0	NV	NV	NV	NV	NV
	NA	OG	OG	OG	AO	MAC	MAC	AO	AO	NA	AO	NA	AO	NA	NA	NA	NA	NA
RUC	NA	6.5-8.5	272	379	126	2.53	0.3	254	100	NA	0.20	NA	4.1	NA	NA	NA	NA	NA
Sep-00	462	7.49	**275**	232	5.2	<0.1	<0.1	13.8	1.69	<1	0.14	0.02		<0.001	0.03			
Sep-00 D	463	7.46	**274**	235	5.2	<0.1	<0.1	13.8	1.54	<1	0.13	0.02		<0.001	0.03			
Nov-01	596	7.53	**314**	307	3.5	<0.1	<0.1	10.1	2.0	<1.0	<0.01	0.02		<0.001	<0.01			
Nov-01 D	597	7.51	**325**	322	3.5	<0.1	<0.1	9.9	2.2	<1.0	<0.01	0.02		<0.001	<0.01			
Dec-02	430	7.81	247	228	1.7	0.10	<0.1	9	0.5	<0.4	0.06	0.02	2.1	<0.001	0.03			
Dec-02 D	431	7.86	246	225	1.7	0.10	<0.1	9	0.5	<0.4	0.06	0.02	2.8	<0.001	0.04			
Sep-03	413	8.48	248	228	1.6	0.10		10	0.8		0.05	0.01	**6.0**	<0.001	0.04	<0.05		
Sep-04	448	7.42	255	237	1.8	0.10		11	0.7		0.05	0.02	2.3	<0.001	<0.01	0.20		
Sep-05	433	7.56	222	229	1.8	<0.1		10	0.6		0.04	0.02	**8.4**	<0.001	0.07	0.12		
Apr-06	378	8.14	206	194	0.58	<0.05	<0.05	4.39	1.1	0.35	**1.89**	<0.05	2.0	<0.001	<0.05	0.14		
Nov-06	555	8.17	**291**	300	1.52	<0.05	<0.05	4.46	1.12	0.30	**0.20**	<0.05	3.5	<0.001	<0.02	0.15		
Apr-07	406	8.02	222	214	0.85	<0.05	<0.05	3.75	0.91	0.23	0.15	<0.05	2.0	<0.001	<0.02	<0.10		
Nov-07	517	7.86	**318**	287	1.69	0.05	<0.05	5.86	1.21	0.33	**0.78**	<0.05	2.5	<0.001	0.03	<0.10		
Apr-08	390	8.28	220	218	0.83	<0.05	<0.05	4.2	0.91	0.33	0.16	<0.05	1.9	<0.001	<0.02	<0.10		
Oct-08	475	7.91	**282**	195	1.10	0.06	<0.05	50.0	0.68	0.40	0.06	<0.05	2.9	<0.001	0.07	0.41		
Apr-09	402	8.17	220	224	0.69	<0.05	<0.05	4.14	0.68	0.24	<0.010	0.06	2.8	<0.001	<0.02	0.25		
Nov-09	563	8.08	**341**	323	0.85	<0.05	<0.05	6.52	0.90	0.29	<0.01	<0.05	4.0	<0.001	<0.02	0.24		
Apr-10	515	8.18	**302**	297	0.79	<0.05	<0.05	4.31	0.72	0.28	<0.01		**7.2**	<0.001	0.44	<0.10		
Nov-10	434	8.26	**292**	265	1.26	<0.05	<0.05	6.43	0.68	0.37	<0.01	<0.05	2.1	0.008*	<0.02	<0.10		
Apr-11	411	7.99	235	233	1.02	<0.05	<0.05	3.31	0.85	0.25	<0.01	<0.05	1.8	<0.001	0.08	0.45		
Nov-11	460	8.01	**312**	314	1.59	<0.05	<0.05	3.88	1.09	0.20	<0.01	<0.02	2.0	<0.001	<0.02	0.15		
Apr-12	518	8.04	**290**	293	1.73	<0.05	<0.05	3.77	0.61	0.17	**0.27**	<0.02	1.6	<0.001	<0.02	0.27		
Nov-12	524	8.20	**313**	313	2.04	<0.05	<0.05	3.19	0.92	0.20	0.03	<0.05	2.5	<0.001	<0.02	<0.10	79.0	28.1
Nov-13	559	8.09	**335**	298	1.48	<0.10	<0.10	4.11	0.94	0.30	<0.01	<0.05	2.7	<0.001	<0.02	0.29	86.1	29.1
Oct-14	482	7.74	**272**	257	1.86	<0.10	<0.10	3.11	0.69	0.32	<0.01	<0.05	1.1	<0.001	<0.02	<0.10	73.4	21.5
Oct-15	513	7.96	**281**	260	4.14	<0.10	<0.10	17.6	0.99	0.31	<0.01	<0.05	2.3	<0.001	<0.02	0.17	68.9	26.4
Nov-16	466	8.19	247	251	1.68	<0.05	<0.05	6.97	0.57	0.25	<0.01	<0.05	1.8	<0.001	<0.02	<0.10	65.0	20.5
Sep-17	492	8.00	246	250	2.76	<0.10	<0.10	11.7	0.75	0.33	**1.03**	<0.05	3.8	<0.001	<0.02	0.18	59.2	23.8
Nov-18	566	7.92	**309**	318	0.64	<0.05	0.20	1.7	0.65	0.28	<0.010	<0.05	2.5	<0.001	0.07	<0.10	79.8	26.7
Oct-19	427	7.72	251	232	2.02	<0.05	<0.05	15.4	0.83	0.45	<0.01	<0.02	3.8	<0.001	<0.02	0.16	58.9	25.2
Oct-20	503	7.97	270	297	0.93	<0.05	<0.05	2.51	0.52	0.35	<0.010	<0.02	2.4	0.002	<0.02	<0.10	72.3	21.8
Apr-21	525	7.73	265	262	7.81	<0.05	<0.05	6.60	3.86	1.29	**0.716**	0.03	**4.3**	0.002	0.13	0.41	57.3	29.7
Oct-21	506	7.73	252	252	3.20	<0.05	<0.05	12.6	0.88	<0.50	<0.010	<0.02	**17.8**	0.008	<0.02	0.10	61.6	23.9
Sep-22	511	7.95	247	230	3.61	<0.05	<0.05	14.6	0.77	<0.05	0.019	0.02	3.6	0.003	<0.02	0.10	59.4	23.9
Nov-23	515	7.38	**281**	321	1.06	<0.05	<0.05	1.9	1.31	<0.50	<0.010	<0.02	1.1	0.004	<0.02	<0.10	75.1	22.7
Nov-24	520	7.96	264	305	3.71	<0.05	<0.05	12.0	1.13	<0.50	<0.020	0.08	2.2	<0.001	<0.02	NM	67.1	23.4
Average	484	7.91	271	262	2.15	<0.10	<0.10	8.77	1.02	0.34	0.12	0.018	3.43	<0.001	0.036	0.15	68.8	24.8
Std. Dev.	58.7	0.27	35.3	39.6	1.57	NA	NA	8.28	0.63	0.22	0.24	0.016	3.08	NA	0.074	0.12	9.10	2.87

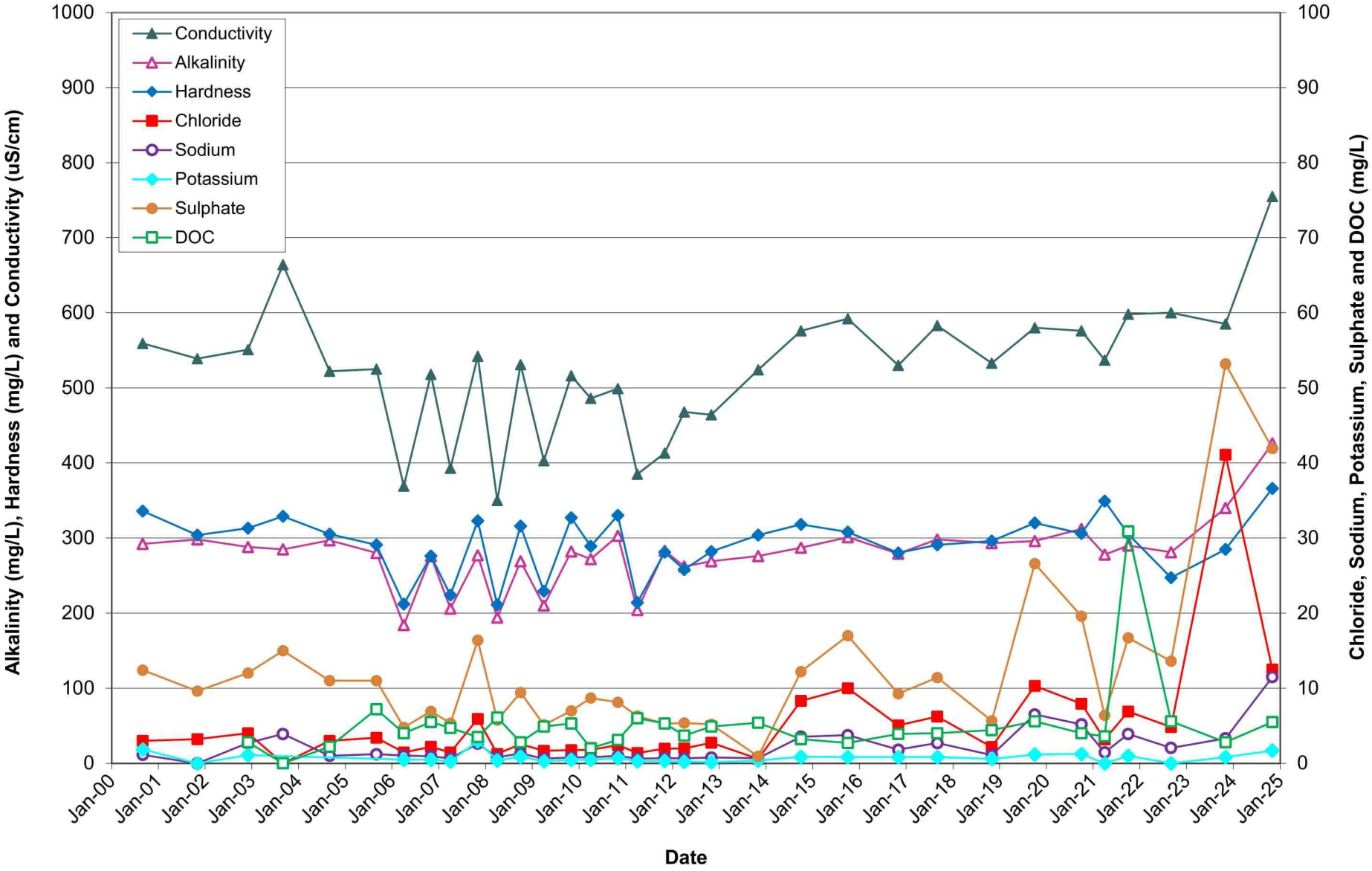
HISTORICAL GROUNDWATER QUALITY DATA: ROBBINS WELL

Parameter	Conductivity	pH	Hardness	Alkalinity	Chloride	Nitrate	Nitrite	Sulphate	Sodium	Potassium	Iron	Phosphorus	DOC	Phenols	Ammonia	TKN	Calcium	Magnesium
Units	uS/cm	Unitless	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ODWS	NV	6.5-8.5	80-100	30-500	250	10	1.0	500	200	NV	0.3	NV	5.0	NV	NV	NV	NV	NV
	NA	OG	OG	OG	AO	MAC	MAC	AO	AO	NA	AO	NA	AO	NA	NA	NA	NA	NA
RUC	NA	6.5-8.5	272	379	126	2.53	0.3	254	100	NA	0.20	NA	4.1	NA	NA	NA	NA	NA
May-95	958	7.91	259	242	**148**	0.20	0.02	16.6	**106**	0.4	**17.7***	0.00			0.04			
Jun-97	1109	7.36	256	239	**198**	0.40	<0.1	19.0	**115**	1.5	0.04	<0.1		0.001	1.04			
Nov-01	918	7.55	235	257	**130**	<0.1	<0.1	14.1	100	<1.0	0.03	<0.01		<0.001	<0.01			
Dec-02	1140	7.88	258	234	**200**	0.30	<0.1	19	**135**	1.4	0.03	0.01	3.2	<0.001	0.01			
Sep-03	1200	8.50	267	246	**225**	0.30		19	**152**		0.01	<0.01	3.0	<0.001	0.02	0.08		
Sep-04	1270	7.63	**296**	273	**230**	0.30		23	**153**		0.03	<0.01	2.1	<0.001	<0.01	0.07		
Sep-05	1340	7.59	**273**	261	**229**	0.30		22	**199**		0.02	<0.01	**9.8**	<0.001	0.04	0.1		
May-06	1070	8.19	252	244	**202**	0.11	<0.05	12.9	**116**	0.45	**0.25**	<0.05	2.9	<0.001	<0.02	0.31		
Apr-07	982	8.31	236	193	**198**	0.06	<0.05	9.58	**119**	0.31	0.11	<0.05	3.2	0.001	<0.05	<0.10		
Nov-07	1110	8.21	258	230	**235**	0.20	<0.05	16.3	**133**	1.07	<0.010	<0.05	**4.4**	0.002	<0.02	0.15		
Apr-08	731	8.27	182	167	**142**	0.08	<0.05	9.19	79.8	0.58	0.12	<0.05	3.8	<0.001	<0.02	<0.10		
Oct-08	1410	8.14	**310**	261	**289**	0.20	<0.05	21.9	**171**	0.66	0.09	<0.05	3.2	<0.001	0.04	0.78		
May-09	1180	8.08	264	234	**283**	0.17	<0.05	13.7	**137**	0.45	<0.010	<0.05	3.2	<0.001	<0.02	0.5		
Nov-09	1040	7.96	**279**	289	**166**	<0.05	<0.05	16.9	**116**	0.47	<0.01	<0.05	**5.0**	<0.001	<0.02	<0.1		
Apr-10	1130	8.02	**319**	261	**306**	0.19	<0.05	17.9	**173**	0.61	**0.24**	<0.05	**4.8**	<0.001	<0.02	0.43		
Nov-10	1270	8.38	**329**	296	**278**	0.19	<0.05	22.2	**178**	0.77	<0.01	<0.05	2.7	<0.001	<0.02	0.17		
Apr-11	540	8.09	166	157	83	<0.05	<0.05	7.46	49.4	0.38	0.17	<0.05	**5.0**	<0.001	0.11	0.42		
Nov-11	825	8.08	260	250	**171**	<0.05	<0.05	12.9	**106**	0.45	<0.01	<0.05	**4.6**	<0.001	<0.02	0.1		
Apr-12	1180	8.03	**274**	254	**233**	0.13	<0.05	13.6	**129**	0.45	<0.01	0.03	2.9	<0.001	<0.02	0.39		
Nov-12	740	8.17	221	234	115	<0.05	<0.05	10.4	80.6	0.50	0.02	<0.05	**4.1**	<0.001	<0.02	0.1	56.0	19.6
Nov-13	1040	8.18	245	256	**169**	<0.25	<0.25	11.5	**117**	0.45	<0.01	<0.05	**4.7**	<0.001	<0.02	0.39	61.9	22.0
Oct-14	1180	7.94	241	281	**210**	<0.25	<0.25	12.2	**136**	0.49	0.02	<0.05	3.9	<0.001	<0.02	0.14	61.9	21.0
Oct-15	1340	8.03	**289**	268	**259**	<0.25	<0.25	24.6	**156**	0.61	<0.01	<0.05	2.2	<0.001	<0.02	0.11	68.4	28.6
Nov-16	1300	8.25	254	268	**273**	<0.25	<0.25	16.9	**158**	0.61	<0.01	<0.05	3.9	<0.001	<0.02	0.12	64.0	22.8
Sep-17	1610	8.12	**278**	300	**312**	<0.25	<0.25	21.3	**198**	0.57	0.01	<0.05	**4.5**	<0.001	<0.02	0.11	69.8	25.2
Nov-18	1030	7.91	248	279	**160**	<0.25	<0.25	9.4	**111**	0.52	<0.010	<0.05	**4.9**	<0.001	0.06	<0.10	62.4	22.3
Oct-19	1290	7.80	**273**	273	**281**	<0.25	<0.25	17.8	**176**	0.84	<0.01	<0.02	**4.5**	<0.001	<0.02	<0.10	69.1	24.3
Sep-22	1560	7.95	**286**	278	**290**	<0.05	<0.05	20.2	**183**	0.19	0.031	<0.02	**4.1**	0.004	<0.02	<0.10	76.5	23.1
Nov-23	1160	7.47	**282**	322	8.6	0.44	<0.05	8.4	**134**	<0.50	0.024	<0.02	3.3	0.005	<0.02	<0.10	71.5	25.2
Nov-24	1130	8.04	223	320	**183**	<0.05	<0.05	17.1	**103**	<0.50	0.021	0.06	3.4	<0.001	<0.02	NM	55.5	20.4
Average	1126	8.00	260	256	**207**	0.16	<0.25	15.9	**134**	0.61	0.046	<0.05	3.97	<0.001	0.053	0.19	65.2	23.1
Std. Dev.	233	0.27	34.8	37.3	70.7	0.11	NA	4.83	36.1	0.31	0.069	NA	1.44	NA	0.19	0.19	6.51	2.58

Notes:

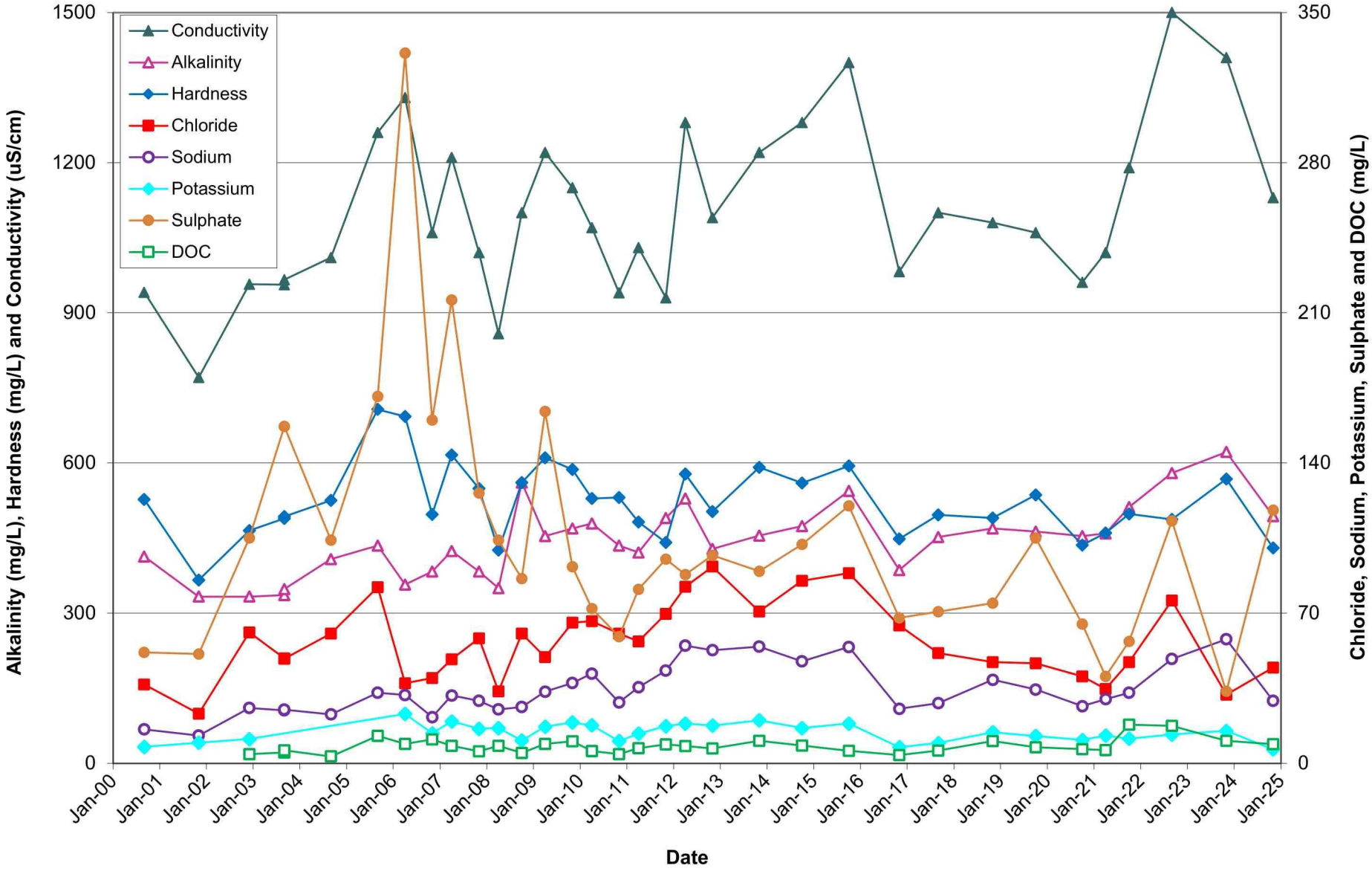
1. ODWS = Ontario Drinking Water Standards (June 2003, Revised June 2006)
2. NV = No value specified; NA = Not Applicable; NM = Not Monitored; D = Lab duplicate
3. RUC= Reasonable Use Criteria; AO= Asthetic Objective; MAC= Maximum Allowable Content; OG= Operational Guideline
4. mg/L = milligrams per litre; µS/cm = microsiemens per centimeter
5. Samples analyzed by Maxxam Analytics or AGAT Laboratories Limited.
6. * indicates outlier interpreted as sample or lab error.
7. Data prior to 2006 from Annual Monitoring Report (2005), Henderson, Paddon and Associates, Ltd.
8. Values in bold represent results greater than the RUC.
9. Shaded values represent results greater than the ODWS.

Monitoring Well TW-1



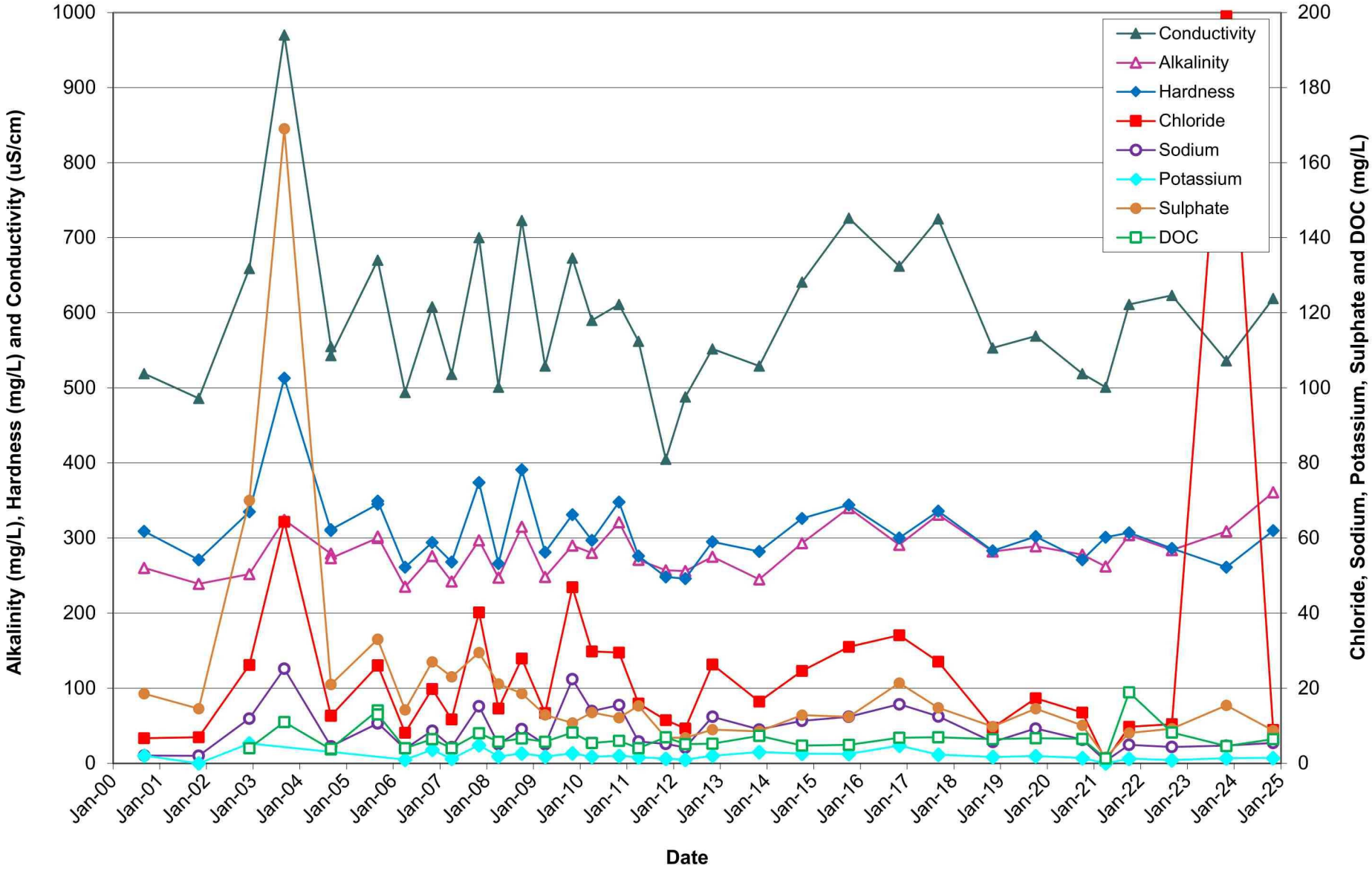
Lindsay Landfill: M-1554

Monitoring Well TW-2



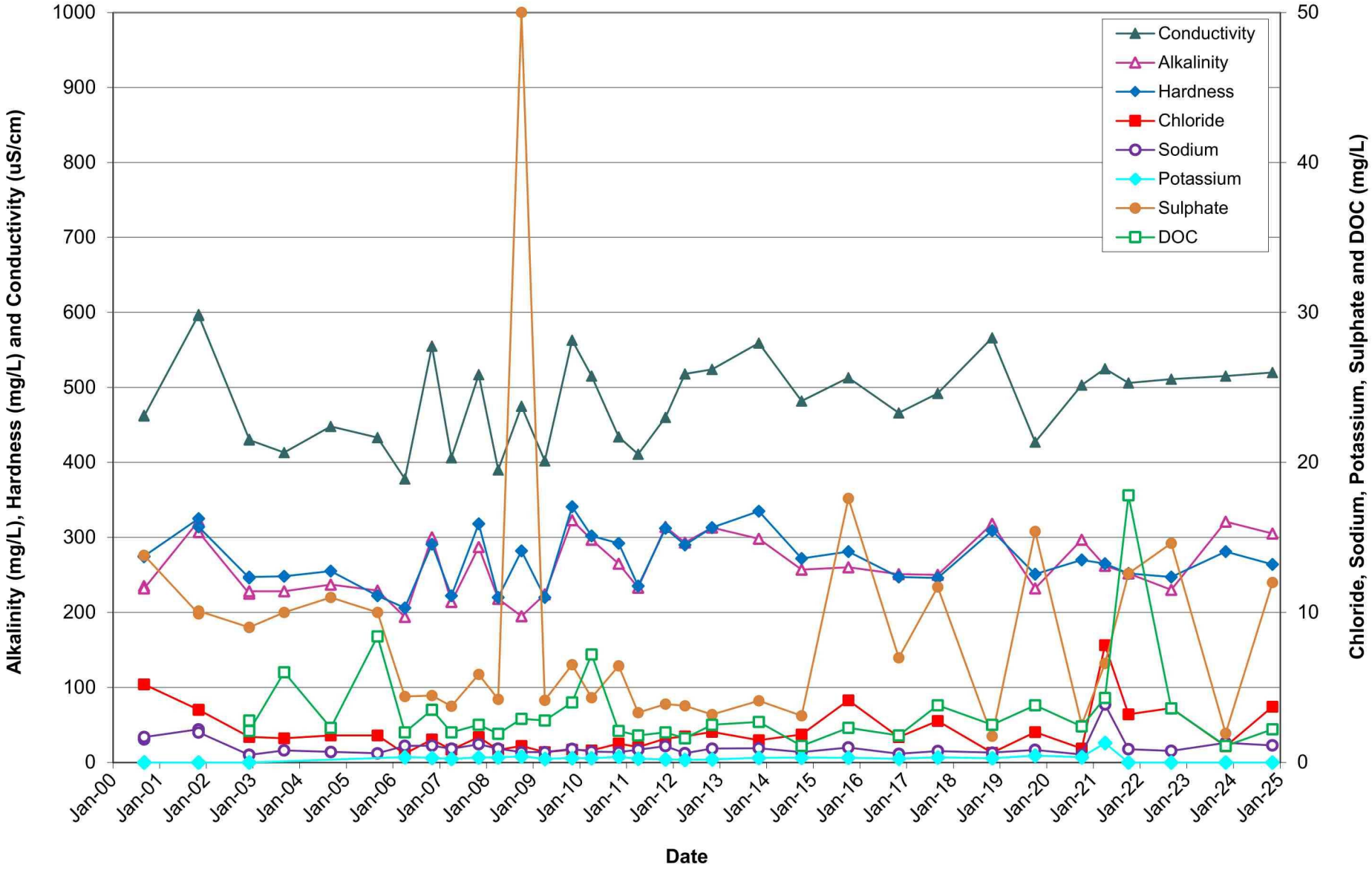
Lindsay Landfill: M-1554

Monitoring Well TW-3



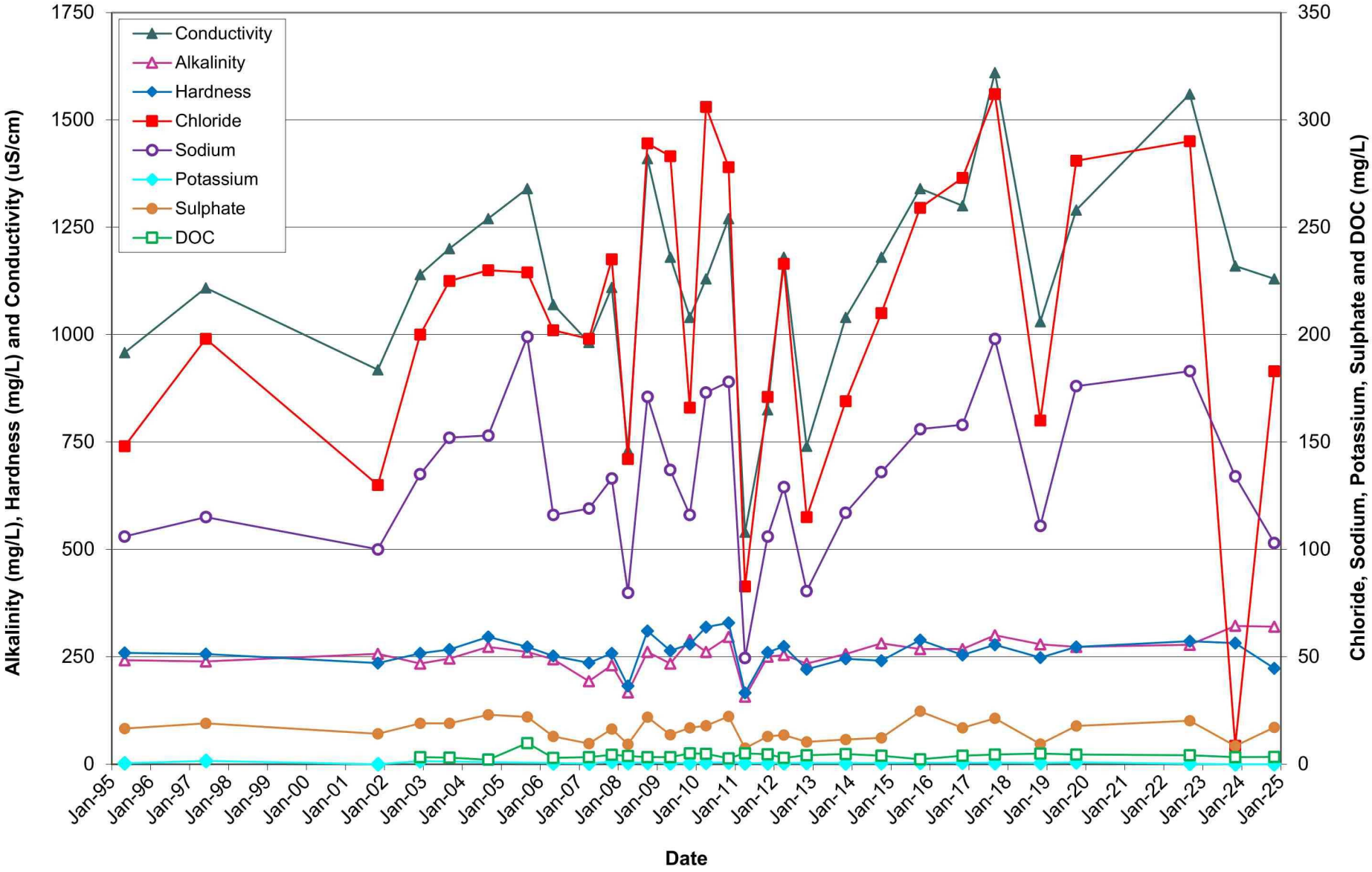
Lindsay Landfill: M-1554

Monitoring Well TW-4



Lindsay Landfill: M-1554

Robbins Well



Lindsay Landfill: M-1554

Appendix F Historical Surface Water Quality Results

HISTORICAL SURFACE WATER QUALITY DATA: SW-1

Parameter		Conductivity	pH	Hardness	Alkalinity	Chloride	Nitrate	Nitrite	Sulphate	Sodium	Potassium	Phosphorus	DOC	Phenols	Ammonia	TKN	Sulphide	Field Temp.	Un-ionized Ammonia
PWQO		NV	6.5 - 8.5	NV	See Note	NV	NV	NV	NV	NV	NV	0.03	NV	0.001	NV	NV	NV	NA	0.02
Units		uS/cm	Unitless	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	°C	mg/L
Jun-97		813	7.39	322	277	70.1	1.20	<0.1	40.9	28.0		<0.1		<0.001	0.02				
Sep-00		1595	7.21	843	519	123	<0.1	<0.1	261	61.7		**2.08**		**0.009**	0.46				
Sep-00	D	1610	7.15	881	523	127	<0.1	<0.1	28.1	58.2		**1.79**		**0.014**	0.43				
Nov-01		871	7.46	420	418	26.7	<0.1	<0.1	24.6	25.1		**0.08**		**0.003**	4.03				
Dec-02		695	7.89	348	294	22.6	0.40	<0.1	46.0	14.1		0.03	8.2	<0.001	3.79				
Dec-02	D	694	7.78	348	293	20.4	0.50	<0.1	41.0	14.8		0.03	7.8	**0.003**	3.19				
Sep-03		564	8.45	285	303	9.5	0.30	NM	19.0	18.3		**0.25**	6.0	**0.005**	3.56	5.38			
Sep-03	D	696	8.41	295	291	41.7	0.10	NM	16.0	18.8		**0.25**	13.0	<0.001	3.51	5.42			
Sep-04		690	7.42	355	357	21.6	0.50	NM	15.0	10.4		**0.14**	5.2	<0.001	0.23	0.97			
Sep-04	D	702	7.39	356	366	19.1	0.50	NM	13.0	10.4		**0.13**	5.2	<0.001	0.24	0.96			
Sep-05		815	7.70	408	374	36.0	1.10	NM	23.0	15.6		**0.31**	16.5	<0.001	0.88	1.98			
Sep-05	D	821	7.75	415	378	35.9	1.10	NM	23.0	15.7		**0.29**	32.0	<0.001	0.86	2.02			
Apr-06		1100	8.24	534	365	32.9	3.57	<0.05	173	26.6	17.3	**0.06**	9.0	<0.001	1.58	3.36	<0.1		
Nov-06		936	8.35	447	410	28.2	0.62	<0.05	72.7	16.6	10.7	**0.07**	11.8	<0.001	1.94	2.99	<0.1	8.5	**0.069**
Apr-07		1110	8.16	544	444	37.5	1.43	<0.05	138	26.2	16.7	<0.05	9.9	**0.002**	3.18	3.27	<0.1	9.0	**0.077**
Nov-07		813	7.95	457	349	39.7	0.80	<0.05	51.0	18.4	6.95	<0.05	10.5	**0.003**	0.04	0.72	<0.1	5.0	0.0004
Apr-08		1090	8.42	566	466	40.1	1.34	<0.05	138	58.9	16.8	<0.05	10.6	<0.001	1.97	2.72	<0.1	3.5	**0.056**
Oct-08		799	8.33	446	359	28.4	1.03	<0.05	28.7	12.0	4.50	<0.05	6.8	**0.002**	0.03	0.77	<0.1	8.0	0.001
Apr-09		1080	8.27	535	425	38.1	1.21	<0.05	123	26.4	14.8	**0.07**	10.4	<0.001	1.05	3.36	<0.1	5.0	**0.024**
Nov-09		1240	8.21	606	492	103	0.78	<0.05	48.5	60.0	12.9	<0.05	13.5	**0.003**	2.89	4.92	<0.1	6.0	**0.062**
Apr-10		1000	8.21	475	438	65.8	1.37	0.12	54.3	39.5	13.9	<0.10	8.8	<0.001	0.22	2.32	<0.1	6.5	0.005
Nov-10		653	8.45	375	341	33.8	0.39	<0.05	12.8	17.2	2.98	**0.08**	6.8	<0.001	<0.02	0.42	<0.1	6.5	<0.001
Apr-11		988	8.12	461	392	50.4	1.48	<0.05	91.8	37.1	11.4	0.03	10.1	<0.001	0.11	0.66	<0.1	4	0.002
Nov-11		964	8.16	487	461	100	0.27	<0.05	54.1	55.5	10.7	**0.05**	11.0	<0.001	4.54	5.47	<0.1	9	**0.110**
Apr-12		1010	8.32	432	422	59.4	2.24	<0.05	55.9	38.9	10.3	**0.08**	8.1	<0.001	0.75	3.18	<0.1	5	0.019
Nov-12		853	8.22	412	334	66.4	2.92	<0.05	65.5	36.4	6.66	0.03	7.7	<0.001	0.41	1.14	<0.05	5	0.008
Apr-13		1020	8.29	466	357	62.6	1.63	<0.25	87.7	45.8	11.9	0.02	7.8	<0.001	0.95	1.86	<0.1	7	**0.030**
Nov-13		890	8.31	440	348	46.4	1.19	<0.25	47.7	34.7	9.24	0.03	9.9	<0.001	0.25	1.05	<0.1	6	0.007
May-14		1120	8.20	515	397	55.9	2.66	<0.25	133	42.9	14.0	0.03	10.0	<0.001	0.30	3.66	<0.05	11	0.009
Oct-14		772	8.23	367	319	43.9	0.59	<0.10	31.6	24.8	6.49	**0.06**	7.6	<0.001	0.14	0.46	<0.1	10	0.004
Apr-15		962	8.19	416	373	46.5	2.03	<0.25	91.3	35.9	10.7	**0.13**	8.7	<0.001	0.44	2.64	<0.05	3.5	0.009
Oct-15		841	8.22	396	336	58.2	0.60	<0.25	49.2	32.9	10.7	**0.13**	7.8	<0.001	0.65	3.14	<0.05	10	**0.021**
Apr-16		1080	8.01	459	395	42.9	2.31	<0.25	113	39.2	12.8	**0.05**	10.7	<0.001	1.06	3.40	NM	8	0.017
Sep-17		1210	8.21	560	470	53.1	2.82	<0.25	128	45.3	15.6	0.03	11	<0.001	1.19	2.18	NM	8	**0.030**
Apr-19		1040	8.00	429	417	44.3	1.99	<0.25	105	37.9	10.6	<0.02	7.9	<0.001	1.21	2.20	<0.1	1	0.011
Apr-20		1110	8.18	461	425	33.9	1.48	<0.25	54.5	29.2	10.1	**0.04**	9.8	**0.002**	0.53	1.13	<0.05	7	0.012
Oct-20		3*	8.16	409	371	29.0	0.69	<0.10	27.9	23.8	8.0	<0.02	9.9	**0.005**	0.24	0.74	<0.05	8	0.005
May-21		<2*	8.11	311	318	22.4	0.64	<0.10	21.6	18.8	8.4	<0.02		**0.002**	0.20	0.72	<0.05	9	0.004
Oct-21		757	8.04	424	368	30.3	0.92	<0.05	16.3	24.4	9.3	**0.09**	31.9	**0.021**	0.49	0.59	<0.05	12	0.011
Apr-22		807	7.81	386	333	25.6	1.06	<0.05	66.9	25.0	8.4	<0.02	9.7	**0.032**	0.29	1.2	<0.05	3	<0.001
Sep-22		623	8.11	354	290	18.1	0.20	<0.05	19.5	12.3	3.4	**0.05**	12.5	**0.004**	0.04	0.67	<0.01	11	<0.001
Apr-23		807	7.68	404	362	26.6	<0.05	<0.05	21.2	27.1	6.9	<0.02	12.7	**0.007**	<0.02	0.68	<0.01	5	<0.001
Nov-23		839	7.87	372	429	53.2	<0.05	<0.05	119	26.6	7.8	**0.33**	12.0	**0.005**	0.44	10.5	<0.05	5	0.004
Apr-24		828	8.08	219	396	27.6	0.72	<0.05	41.3	23.4	4.8	**0.04**	11.4	<0.001	0.34	0.76	<0.01	10	0.007
Nov-24		798	7.91	368	425	27.6	<0.05	<0.05	36.5	21.8	7.0	<0.02	11.7	<0.001	0.41	0.46	<0.01	10	0.006
Average		923	8.02	440	383	45.0	1.04	<0.25	63.8	29.6	10.1	**0.22**	10.8	**0.0039**	1.14	2.31	<0.1	7.03	**0.020**
Std. Dev.		224	0.34	121	61.0	26.1	0.87	NA	51.5	14.1	3.8	0.46	5.4	0.0058	1.29	2.02	NA	2.67	0.027

HISTORICAL SURFACE WATER QUALITY DATA: SW-1

Parameter		Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
PWQO		0.020	0.10	NV	1.1	0.20	0.0002	0.0089	0.0009	0.005	0.30	0.025	0.040	0.025	0.10	0.0001	0.0003	0.006	0.020
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jun-97				0.020	<0.002	0.160	<0.0001	**0.010**	<0.002	0.0005	0.18	<0.001	<0.04	0.020		<0.01		**0.011**	**0.060**
Sep-00				0.010	<0.002	**0.810**	<0.0001	**0.030**	**0.002**	<0.001	**13.2**	<0.001	<0.04	**0.070**		<0.01		**0.060**	**0.880**
Sep-00	D			0.070	<0.002	**0.820**	<0.0001	**0.030**	**0.002**	0.001	**14.6**	<0.001	<0.04	**0.050**		<0.01		**0.060**	**0.600**
Nov-01				0.030	<0.002	0.170	<0.0001	<0.01	0.0004	<0.001	**0.85**	<0.001	<0.04	<0.02		<0.0001		<0.01	**0.090**
Dec-02				0.025	<0.005	0.190	<0.0001	<0.01	**0.003**	0.0018	**5.3**	0.004	<0.002	<0.02		**0.0005**		<0.005	**0.050**
Dec-02	D			0.020	<0.005	0.190	<0.0001	<0.01	**0.002**	0.0014	**2.9**	0.002	<0.002	0.020		**0.0004**		<0.005	**0.040**
Sep-03				0.026	<0.001	**0.203**	<0.0001	0.007	**0.007**		**2.77**	0.001	<0.002	<0.01		<0.0001		<0.005	0.018
Sep-03	D			0.028	<0.001	**0.208**	<0.0001	0.006	**0.007**		**4.46**	0.001	<0.002	<0.01		<0.0001		<0.005	0.019
Sep-04				0.025	<0.001	**0.231**	0.0002	0.004	**0.001**		**3.44**	0.002	<0.0001	<0.01		<0.0001		<0.005	0.015
Sep-04	D			0.020	<0.001	**0.226**	<0.0001	0.003	**0.001**		**3.36**	0.001	<0.0001	<0.01		<0.0001		<0.005	0.012
Sep-05				0.034	<0.002	**0.204**	0.0001	0.002	<0.0005		**6.36**	0.001	<0.005	<0.01		<0.0001		<0.005	**0.038**
Sep-05	D			0.036	<0.002	0.196	0.0002	0.002	<0.0005		**6.95**	0.001	<0.005	<0.01		<0.0001		<0.005	**0.042**
Nov-06		<0.006	<0.003	0.032	<0.001	**0.230**	<0.002	<0.003	**0.001**	0.004	**1.44**	<0.002	<0.001	<0.003	<0.004	<0.002	<0.003	<0.001	**0.076**
Apr-07		<0.006	<0.003	0.026	<0.001	**0.415**	<0.002	<0.003	<0.001	<0.002	**0.31**	<0.002	<0.001	<0.003	<0.004	<0.002	<0.003	<0.001	0.007
Nov-07		<0.006	<0.003	0.019	<0.001	0.167	<0.002	<0.003	<0.001	<0.002	0.058	<0.002	<0.001	<0.003	<0.004	<0.002	<0.003	<0.001	0.012
Apr-08		<0.006	<0.003	0.029	<0.001	**0.353**	<0.002	<0.003	<0.001	<0.002	**0.708**	<0.002	<0.001	0.004	<0.004	<0.002	<0.003	<0.001	0.014
Oct-08		<0.006	<0.003	0.014	<0.001	0.114	<0.002	0.003	<0.001	<0.002	0.157	<0.002	<0.001	<0.003	<0.004	<0.002	<0.003	<0.001	**0.024**
Apr-09		<0.006	<0.003	0.027	<0.001	**0.472**	<0.002	<0.003	<0.001	<0.002	**0.927**	<0.002	<0.001	<0.003	<0.004	<0.002	<0.003	0.001	**0.326**
Nov-09		<0.006	<0.003	0.032	<0.001	**0.396**	<0.002	0.004	<0.001	<0.002	**0.923**	<0.002	<0.001	0.005	<0.004	<0.002	<0.003	0.001	0.006
Apr-10		<0.006	<0.003	0.029	<0.001	**0.492**	<0.002	0.004	<0.001	<0.002	**1.36**	<0.002	<0.001	0.005	<0.004	<0.002	<0.003	<0.001	0.007
Nov-10		<0.006	<0.003	0.002	<0.001	0.011	<0.002	<0.003	<0.001	<0.002	0.166	<0.002	<0.001	<0.003	<0.004	<0.002	<0.003	<0.001	<0.005
Apr-11		<0.006	<0.003	0.029	<0.001	**0.403**	<0.002	<0.003	<0.001	<0.002	**0.446**	<0.002	<0.001	0.003	<0.004	<0.002	<0.003	<0.001	0.016
Nov-11		<0.006	<0.003	0.040	<0.001	**0.464**	<0.002	0.005	<0.001	0.002	**1.10**	<0.002	<0.001	0.004	<0.004	<0.002	<0.003	0.001	**0.022**
Apr-12		<0.006	<0.003	0.034	<0.001	**0.451**	<0.002	0.004	<0.001	0.002	**1.37**	<0.002	<0.001	<0.003	<0.004	<0.002	<0.003	0.001	0.008
Nov-12		<0.006	<0.003	0.024	<0.001	**0.329**	<0.002	<0.003	<0.001	<0.002	0.30	<0.002	<0.001	0.012	<0.004	<0.002	<0.003	0.001	0.006
Apr-13		<0.006	<0.003	0.030	<0.001	**0.449**	<0.002	<0.003	<0.001	<0.002	**0.322**	<0.002	<0.001	<0.003	<0.004	<0.002	<0.003	<0.001	**0.022**
Nov-13		<0.006	<0.003	0.027	<0.001	**0.355**	<0.002	<0.003	<0.001	<0.002	**0.605**	<0.002	<0.001	<0.003	<0.004	<0.002	<0.003	<0.001	0.005
May-14		<0.006	<0.003	0.036	<0.001	**0.717**	<0.0001	<0.003	<0.0005	<0.002	**0.439**	<0.002	<0.001	<0.003	<0.004	<0.0001	<0.0003	0.005	0.008
Oct-14		<0.006	<0.003	0.021	<0.001	**0.205**	<0.0001	<0.003	<0.0005	<0.002	**0.483**	<0.002	<0.001	<0.003	<0.004	<0.0001	<0.0003	<0.001	<0.004
Apr-15		<0.006	<0.003	0.030	<0.001	**0.566**	<0.0001	0.004	0.0005	0.002	**0.914**	<0.002	<0.001	<0.003	<0.004	<0.0001	<0.0003	0.001	0.008
Oct-15		<0.006	<0.003	0.050	<0.001	**0.396**	**0.0003**	<0.003	**0.0015**	**0.006**	**3.96**	0.005	<0.001	0.003	<0.004	<0.0001	<0.0003	0.003	**0.028**
Apr-16		<0.006	<0.003	0.035	<0.001	**0.735**	<0.0001	<0.003	<0.0005	0.002	**0.96**	<0.002	<0.001	<0.003	<0.004	<0.0001	<0.0003		
Sep-17		<0.006	<0.003	0.042	<0.001	**0.907**	<0.0001	<0.003	<0.0005	<0.002	**0.505**	<0.002	<0.001	<0.003	<0.004	0.0001	<0.0003	<0.001	0.007
Apr-19		<0.006	<0.003	0.037	<0.001	**0.537**	<0.0001	0.005	<0.0005	<0.002	**0.36**	<0.001	<0.001	<0.003	<0.004	<0.0001	<0.0003	<0.001	0.010
Apr-20		<0.006	<0.003	0.028	<0.001	**0.649**	<0.0001	<0.003	<0.0005	**0.018**	**1.11**	<0.001	<0.001	0.008	<0.004	<0.0001	<0.0003	<0.001	0.005
Oct-20		<0.006	<0.003	0.018	<0.001	**0.368**	<0.0001	<0.003	<0.0005	<0.002	0.013	<0.001	<0.001	<0.003	<0.004	<0.0001	<0.0003	<0.001	<0.005
May-21		<0.006	<0.003	0.020	<0.001	**0.411**	<0.0001	<0.003	<0.0005	0.002	**0.83**	0.001	<0.001	<0.003	<0.002				
Oct-21		<0.006	<0.003	0.046	<0.001	**0.328**	0.0001	<0.003	**0.001**	0.003	**5.86**	0.002	<0.001	<0.003	<0.002	<0.0001	<0.0003	0.001	<0.020
Apr-22		<0.006	<0.003	0.028	<0.001	**0.461**	<0.0001	<0.003	<0.0005	<0.002	**0.35**	<0.001	<0.001	<0.003	<0.002	<0.0001	<0.0003	<0.001	<0.020
Sep-22		<0.006	<0.003	0.027	<0.001	**0.255**	<0.0001	<0.003	<0.0005	0.002	**2.4**	<0.001	<0.001	<0.003	<0.002	<0.0001	<0.0003	0.001	<0.020
Apr-23		<0.006	<0.003	0.060	<0.001	**0.389**	<0.0001	<0.003	0.0008	<0.002	**2.05**	<0.001	<0.001	<0.003	<0.002	<0.0001	<0.0003	<0.001	**0.062**
Nov-23		<0.006	<0.003	0.030	<0.001	**0.392**	<0.0001	<0.003	<0.0005	<0.002	**0.82**	<0.001	<0.001	0.013	<0.002	<0.0001	<0.0003	<0.001	<0.020
Apr-24		<0.003	<0.003	0.033	<0.001	**0.689**	<0.0001	<0.003	<0.0005	<0.002	**0.89**	<0.0005	0.002	<0.003	<0.002	<0.0001	<0.0003	<0.002	<0.020
Nov-24		<0.003	<0.003	0.024	<0.001	**0.250**	<0.0001	<0.003	<0.0005	<0.002	**2.55**	<0.0005	<0.002	0.006	<0.002	<0.0001	<0.0003	<0.002	<0.020
Average		<0.006	<0.003	0.0296	<0.001	**0.386**	<0.0001	0.0040	0.0009	0.0019	**2.25**	<0.002	<0.001	0.007	<0.004	<0.002	<0.003	0.004	0.062
Std. Dev.		NA	NA	0.0118	NA	0.207	NA	0.0060	0.0014	0.0029	3.14	NA	NA	0.013	NA	NA	NA	0.013	0.165

HISTORICAL SURFACE WATER QUALITY DATA: SW-2

Parameter		Conductivity	pH	Hardness	Alkalinity	Chloride	Nitrate	Nitrite	Sulphate	Sodium	Iron	Phosphorus	DOC	Phenols	Ammonia	TKN	Sulphide	Field Temp.	Un-ionized Ammonia
PWQO		NV	6.5 - 8.5	NV	See Note	NV	NV	NV	NV	NV	0.3	0.03	NV	0.001	NV	NV	NV	NA	0.02
Units		uS/cm	Unitless	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	°C	mg/L
Jun-97		1733	7.01	433	359	302	<0.1	<0.1	71.1	118	**1.31**	**0.30**		**0.012**	<0.01				
Sep-00		1666	7.07	697	722	97.1	<0.1	<0.1	15.2	62.0	**11.2**	**0.46**		**0.188**	14.8				
Nov-01		809	7.29	383	438	24.8	<0.1	<0.1	10.2	19.9	**2.49**	**0.20**		**0.048**	4.14				
Nov-01	D	810	7.26	378	404	24.8	<0.1	<0.1	10.4	15.5	**2.43**	**0.15**		**0.048**	4.10				
Dec-02		1260	7.51	640	504	59.9	0.2	0.2	120	40.2	0.08	**2.87**	20.3	**0.006**	15.4				
Sep-03		1230	8.10	399	405	127	<0.1	NM	28	68.5	**2.85**	**2.08**	50	**0.049**	15.4	27.3			
Sep-05		Discontinued																	
Average		1251	7.37	488	472	105.9	<0.1	<0.1	42.5	54.0	**3.39**	**1.01**	35.2	**0.059**	8.97	NA	NA	NA	NA
Std. Dev.		399	0.40	142	132	104.2	NA	NA	44.4	38.0	3.96	1.17	21.0	0.066	6.99	NA	NA	NA	NA

Parameter		Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
PWQO		0.020	0.10	NV	1.1	0.20	0.0002	0.0089	0.0009	0.005	0.025	0.040	0.025	0.10	0.0001	0.0003	0.006	0.020
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jun-97		NM	NM	0.04	<0.002	**0.73**	<0.0001	**0.01**	<0.002	0.0002	0.002	<0.04	**0.030**	NM	<0.01	NM	**0.018**	**0.04**
Sep-00		NM	NM	0.02	<0.002	**0.65**	<0.0001	**0.01**	**0.0011**	**0.008**	<0.001	<0.04	**0.040**	NM	<0.01	NM	**0.030**	**0.08**
Nov-01		NM	NM	0.03	<0.002	0.16	**0.0004**	<0.01	0.0006	<0.001	<0.001	<0.04	<0.02	NM	<0.0001	NM	<0.01	**0.08**
Nov-01	D	NM	NM	0.01	<0.002	<0.01	**0.002**	<0.01	0.0006	<0.001	<0.001	<0.04	<0.02	NM	<0.0001	NM	<0.01	**0.08**
Dec-02		NM	NM	0.18	<0.005	**0.66**	**0.003**	**0.04**	**0.0197**	**0.053**	**0.034**	0.007	**0.050**	NM	**0.0019**	NM	**0.025**	**1.15**
Sep-03		NM	NM	0.16	<0.001	**0.757**	**0.006**	**0.019**	**0.0297**		**0.042**	0.012	<0.01	NM	0.0001	NM	**0.007**	**0.114**
Sep-05		Discontinued																
Average		NA	NA	0.073	<0.002	**0.49**	**0.0017**	**0.015**	**0.0088**	**0.012**	0.013	0.0165	0.024	NA	**0.0020**	NA	**0.015**	**0.257**
Std. Dev.		NA	NA	0.076	NA	0.32	0.0022	0.013	0.013	0.023	0.019	0.0056	0.019	NA	0.0024	NA	0.011	0.438

HISTORICAL SURFACE WATER QUALITY DATA: SW-3

Parameter	Conductivity	pH	Hardness	Alkalinity	Chloride	Nitrate	Nitrite	Sulphate	Sodium	Potassium	Phosphorus	DOC	Phenols	Ammonia	TKN	Sulphide	Field Temp.	Un-ionized Ammonia
PWQO	NV	6.5 - 8.5	NV	See Note	NV	NV	NV	NV	NV	NV	0.03	NV	0.001	NV	NV	NV	NA	0.02
Units	uS/cm	Unitless	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	°C	mg/L
May-06	1020	8.36	470	361	37.2	1.33	<0.05	155	22.1	13.1	<0.05	8.5	<0.001	0.02	0.72			
Apr-07	1010	8.13	511	383	36.2	1.22	<0.05	134	25.0	14.0	<0.05	8.0	0.001	<0.02	1.04	<0.1	9	<0.0005
Apr-08	852	8.42	443	351	33.5	0.98	<0.05	100	21.6	11.0	<0.05	8.2	<0.001	<0.02	0.35	NA	4	<0.0006
Apr-09	886	8.34	462	342	30.1	1.33	<0.05	98.2	22.4	11.0	<0.05	10.5	<0.001	0.1	1.0	<0.1	5	0.0027
Apr-10	839	8.26	407	368	55.7	1.02	0.13	46.5	34.0	11.3	<0.10	8.9	<0.001	<0.02	0.26	<0.1	8	<0.0006
Apr-11	965	8.24	457	389	52.2	1.65	<0.05	83.8	36.9	11.0	<0.02	9.2	<0.001	0.05	1.40	<0.1	3	0.0009
Nov-11	923	8.26	488	457	91.0	0.55	<0.05	56.9	50.6	10.7	0.02	10.4	<0.001	1.39	2.58	<0.1	7.5	**0.038**
Apr-12	1010	8.34	431	422	62.9	1.73	<0.05	59.0	41.3	10.9	**0.04**	8.6	<0.001	<0.02	1.20	<0.1	5	<0.0005
Nov-12	664	8.29	311	261	55.6	<0.05	<0.05	41.1	28.8	4.2	**0.06**	7.8	<0.001	<0.02	0.69	<0.1	5	<0.0005
Apr-13	948	8.31	440	343	55.7	1.76	<0.25	78.3	41.7	11.4	<0.02	7.0	<0.001	<0.02	0.52	<0.1	7	<0.00032
Nov-13	964	8.30	448	374	54.9	0.65	<0.25	58.1	36.7	9.41	0.02	9.1	<0.001	0.28	0.80	<0.1	4	0.0063
May-14	1110	8.28	504	392	60.8	1.09	<0.25	126	45.9	14.4	**0.04**	10.1	<0.001	0.12	0.75	<0.05	15	0.0059
Oct-14	745	8.10	352	315	37.7	0.12	<0.10	24.9	22.7	5.92	**0.06**	8.8	**0.002**	<0.02	0.34	<0.1	9	<0.002
Apr-15	922	8.18	412	370	48.1	1.51	<0.25	84.4	36.4	10.1	**0.16**	8.8	<0.001	0.02	1.94	<0.05	3.9	0.0005
Apr-16	966	8.06	398	381	41.2	1.06	<0.25	90.6	32.4	8.99	<0.02	7.5	<0.001	<0.02	0.90		8.5	0.0004
Nov-16	882	8.30	384	396	50.1	0.60	<0.25	56.6	27.5	8.38	<0.02	10	<0.001	0.03	0.48	<0.05	7.0	0.0009
May-18	1200	8.09	520	450	50.0	1.72	0.057	130			0.071	10	<0.001	1.3	1.9		10	**0.029**
May-21	1200	8.09	520	450	50.0	1.72	0.057	130			0.071	10	<0.001	1.3	1.9		10	**0.029**
Apr-22	632	7.74	281	291	15.0	1.04	<0.05	27.2	13.0	6.23	<0.02	8.4	**0.029**	<0.02	0.44	<0.05	5	0.002
Sep-22	568	7.96	261	216	25.2	<0.05	<0.05	36.0	17.9	7.51	**0.04**	21.4	0.001	<0.02	0.62	<0.01	11	0.001
Apr-23	1040	8.03	565	441	41.9	1.48	<0.05	65.3	43.2	14.6	0.030	10.8	**0.006**	0.58	1.36	<0.01	1	0.006
Nov-23	848	7.87	510	404	5.51	0.11	<0.05	14.7	32.2	11.0	**0.30**	11.0	**0.006**	<0.02	5.03	<0.05	1	<0.001
Apr-24	829	8.21	234	400	28.8	0.64	<0.05	40.9	18.8	3.81	**0.05**	11.8	<0.001	0.02	1.04	<0.01	10	0.001
Average	914	8.18	426	372	44.3	1.11	<0.25	75.5	31.0	10.0	0.044	9.77	<0.001	0.23	1.19	<0.1	6.8	0.0059
Std. Dev.	161	0.17	88.8	59.8	17.8	0.51	NA	39.6	10.23	3.07	0.065	2.81	NA	0.45	1.03	NA	3.4	0.011

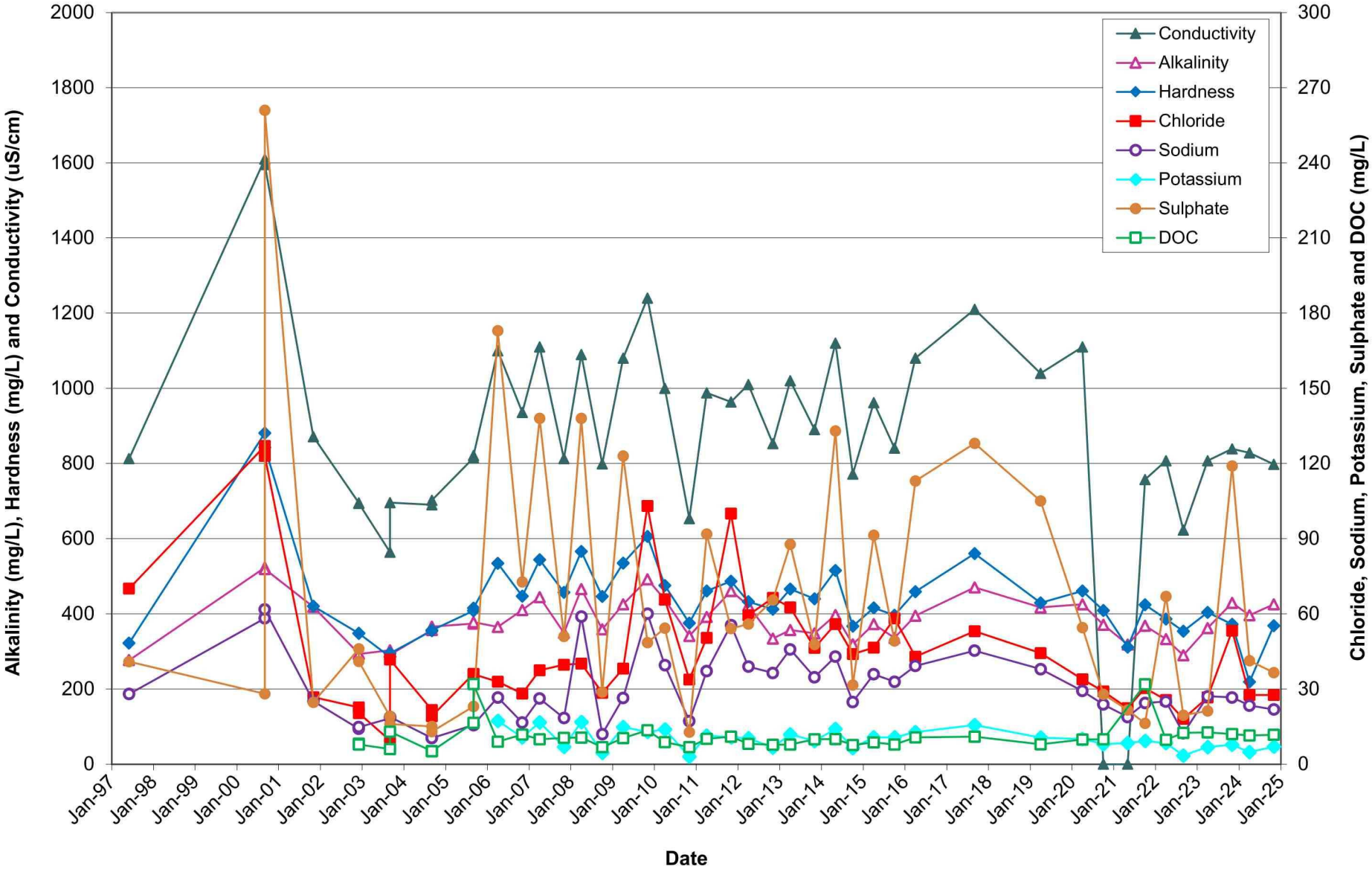
HISTORICAL SURFACE WATER QUALITY DATA: SW-3

Parameter	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
PWQO	0.02	0.100	NV	1.1	0.2	0.0002	0.0089	0.0009	0.005	0.3	0.025	0.04	0.025	0.1	0.0001	0.0003	0.006	0.02
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
May-06										**0.51**								
Apr-07	<0.006	<0.003	0.030	<0.001	**0.358**	<0.002	<0.003	<0.001	<0.002	0.27	<0.002	<0.001	0.006	<0.004	<0.002	<0.003	<0.001	0.02
Apr-08	<0.006	<0.003	0.021	<0.001	0.198	<0.002	<0.003	<0.001	<0.002	**0.34**	<0.002	<0.001	<0.003	<0.004	<0.002	<0.003	<0.001	**0.04**
Apr-09	<0.006	<0.003	0.021	<0.001	**0.343**	<0.002	<0.003	<0.001	0.002	**0.33**	<0.002	<0.001	<0.003	<0.004	<0.002	<0.003	0.001	0.01
Apr-10	<0.006	<0.003	0.018	<0.001	**0.413**	<0.002	0.003	<0.001	<0.002	0.022	<0.002	<0.001	0.004	<0.004	<0.002	<0.003	<0.001	<0.005
Apr-11	<0.006	<0.003	0.022	<0.001	**0.354**	<0.002	<0.003	<0.001	<0.002	0.043	<0.002	<0.001	0.003	<0.004	<0.002	<0.003	<0.001	<0.005
Nov-11	<0.006	<0.003	0.026	<0.001	**0.420**	<0.002	0.004	<0.001	<0.002	0.027	<0.002	<0.001	0.003	<0.004	<0.002	<0.003	<0.001	0.008
Apr-12	<0.006	<0.003	0.026	<0.001	**0.559**	<0.002	0.004	<0.001	0.002	0.103	<0.002	<0.001	<0.003	<0.004	<0.002	<0.003	<0.001	0.007
Nov-12	<0.006	<0.003	0.017	<0.001	0.173	<0.002	<0.003	<0.001	<0.002	0.12	<0.002	<0.001	0.010	<0.004	<0.002	<0.003	0.002	0.011
Apr-13	<0.006	<0.003	0.022	<0.001	**0.509**	<0.002	<0.003	<0.001	<0.002	<0.01	<0.002	<0.001	<0.003	<0.004	<0.002	<0.003	<0.001	<0.005
Nov-13	<0.006	<0.003	0.019	<0.001	**0.308**	<0.002	<0.003	<0.001	<0.002	0.062	<0.002	<0.001	<0.003	<0.004	<0.002	<0.003	<0.001	<0.005
May-14	<0.006	<0.003	0.034	<0.001	**0.766**	<0.0001	<0.003	<0.001	<0.002	0.183	<0.002	<0.001	<0.003	<0.004	<0.0001	<0.0003	0.005	0.009
Oct-14	<0.006	<0.003	0.013	<0.001	0.184	<0.0001	<0.003	<0.0005	<0.002	0.031	<0.002	<0.001	<0.003	<0.004	<0.0001	<0.0003	<0.001	<0.005
Apr-15	<0.006	<0.003	0.029	<0.001	**0.534**	<0.0001	0.004	0.0006	0.002	**0.685**	<0.002	<0.001	<0.003	<0.004	<0.0001	<0.0003	0.002	0.014
Apr-16	<0.006	<0.003	0.021	<0.001	**0.467**	<0.0001	<0.003	<0.0005	<0.002	0.072	<0.002	<0.001	<0.003	<0.004	<0.0001	<0.0003	NM	NM
Nov-16	<0.006	<0.003	0.022	<0.001	**0.335**	<0.0001	0.005	<0.0005	<0.002	0.282	<0.002	<0.001	<0.003	<0.004	<0.0001	<0.0003	<0.001	<0.005
May-21	<0.006	<0.003	0.020	<0.001	**0.378**	<0.0001	<0.003	<0.0005	<0.002	**0.663**	<0.001	<0.001	<0.003	<0.002	**0.0002**	<0.0003	<0.001	<0.005
Apr-22	<0.006	<0.003	0.015	<0.001	**0.342**	<0.0001	<0.003	<0.0005	<0.002	0.188	<0.001	<0.001	<0.003	0.004	<0.0001	<0.0003	<0.001	<0.020
Sep-22	<0.006	<0.003	0.020	<0.001	**0.680**	<0.0001	<0.003	0.001	0.004	**0.571**	0.001	<0.001	<0.003	<0.002	<0.0001	<0.0003	0.002	<0.020
Apr-23	<0.006	<0.003	0.038	<0.001	**0.964**	<0.0001	<0.003	<0.0005	0.002	**2.230**	<0.001	<0.001	<0.003	<0.002	<0.0001	<0.0003	<0.001	<0.020
Nov-23	<0.012	<0.006	0.107	<0.002	**0.504**	**0.001**	**0.028**	**0.008**	**0.032**	**18.4**	**0.030**	<0.002	**0.031**	<0.004	<0.0002	<0.0006	**0.024**	**0.088**
Apr-24	<0.003	<0.003	0.034	<0.001	**0.628**	0.0001	0.003	<0.0005	0.003	**1.7**	0.002	0.005	0.005	<0.002	<0.0001	<0.0003	0.003	<0.020
Average	<0.006	<0.003	0.027	<0.001	**0.448**	<0.002	0.003	<0.001	<0.002	**1.278**	<0.002	<0.001	0.0040	<0.004	<0.0001	<0.0003	0.0023	0.0132
Std. Dev.	NA	NA	0.019	NA	0.196	NA	0.006	NA	NA	3.963	NA	NA	0.0066	NA	NA	NA	0.0052	0.0196

Notes:

1. Analytical results in mg/L (milligrams per litre) unless otherwise specified. µS/cm = microsiemens per centimeter.
2. PWQO refers to the Provincial Water Quality Objectives established by the Ministry of the Environment (July 1994).
3. A Total Phosphorous concentration of 0.03 mg/L applies to streams and rivers.
4. NM = Not Monitored; NV = No value specified; NA = Not Applicable
5. Alkalinity should not be decreased by more than 25% of the natural concentration.
6. Samples analyzed by an accredited laboratory.
7. Data prior to 2006 from Annual Monitoring Report (2005), Henderson, Paddon and Associates, Ltd.
8. Detection limits in italics are higher than the PWQO.

Surface Water Monitoring Location SW-1



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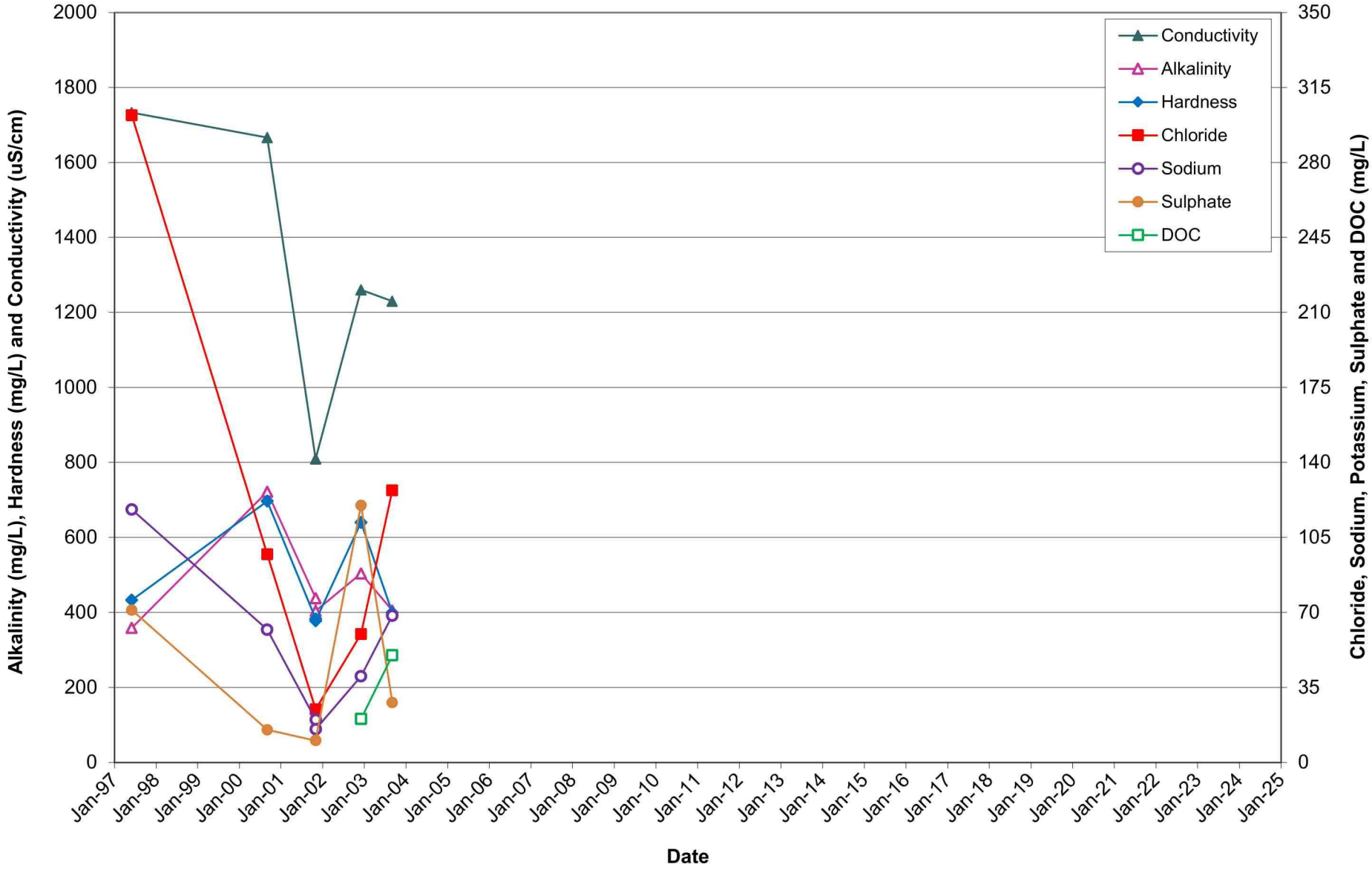
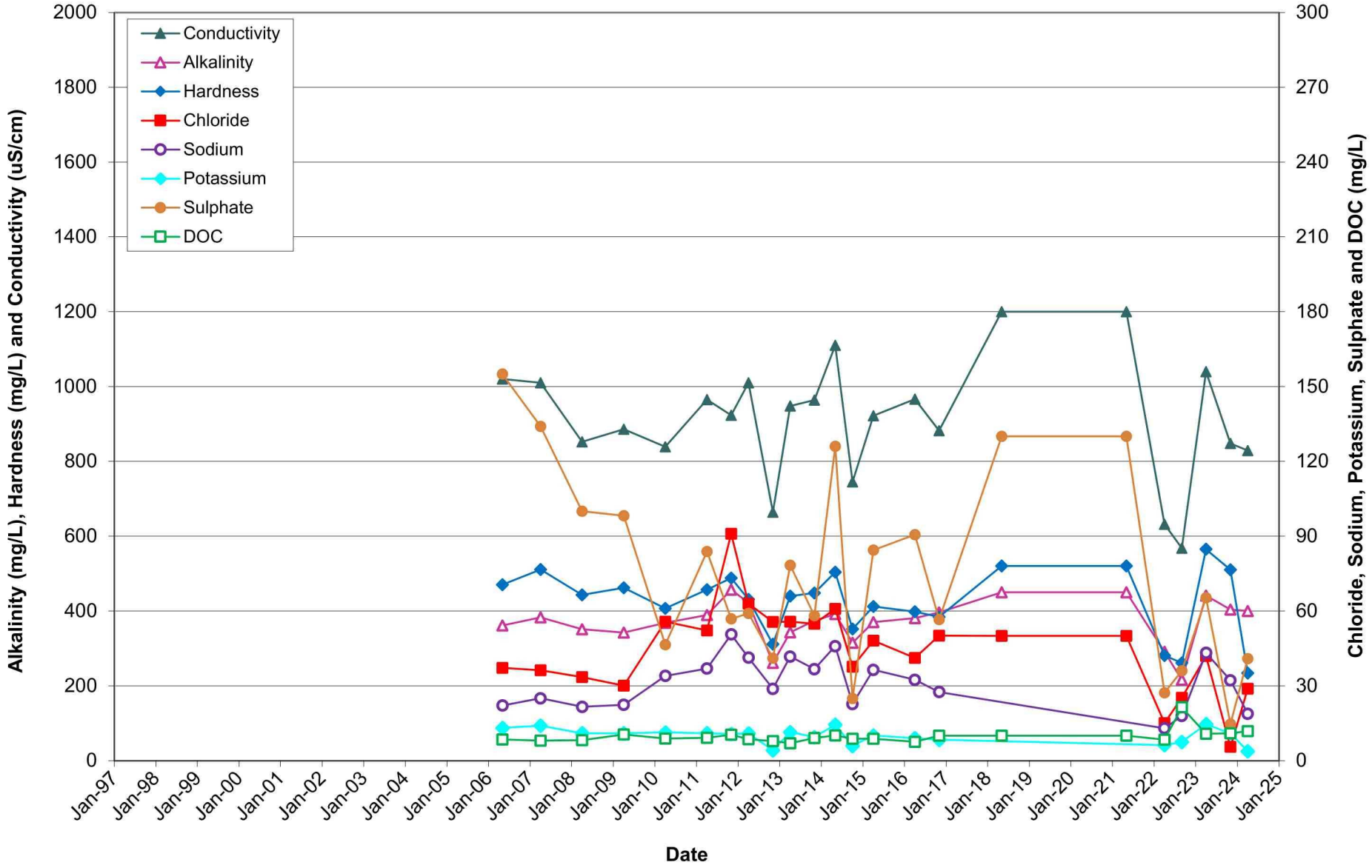
Surface Water Monitoring Location SW-2



Lindsay Landfill: 2402868

Surface Water Monitoring Location SW-3



Lindsay Landfill: 2402868